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Mathematics Grade Two

Module 4: Super Shapes

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Grade Two Mathematics: Module 4

Super Shapes

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Grade Two Mathematics
Module 4: Super Shapes
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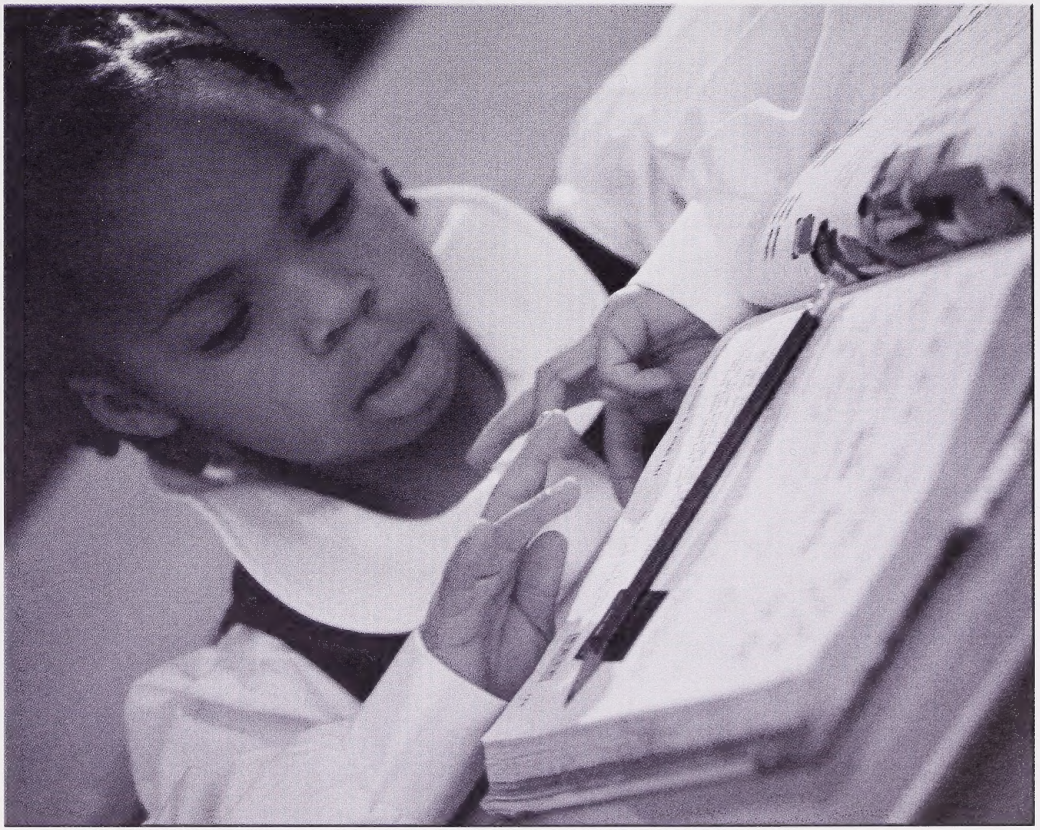
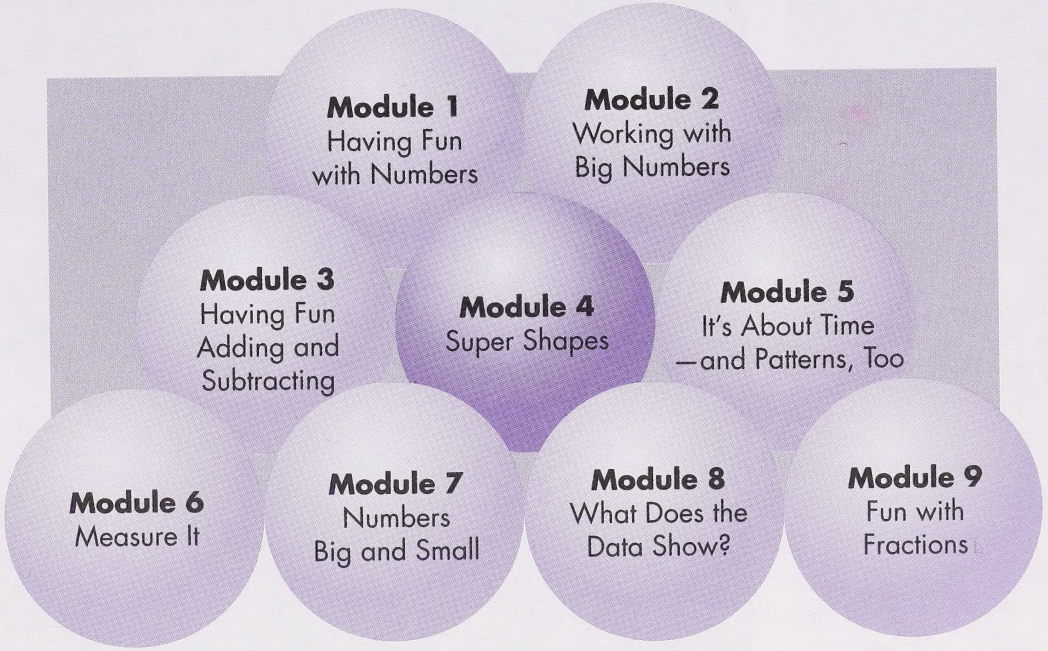
Welcome

to Grade Two Mathematics



Have you ever shared a cookie with a friend? Did you try to break it evenly so that you each got the same amount of cookie? Have you tried to figure out how tall you are? Can you tell how much time you have to do something? How much does something weigh? In Grade Two Mathematics, you will learn how to do these activities.

Look at the picture on this page. It gives the title of the Student Module Booklets you will be using. You are now using Module 4: Super Shapes.



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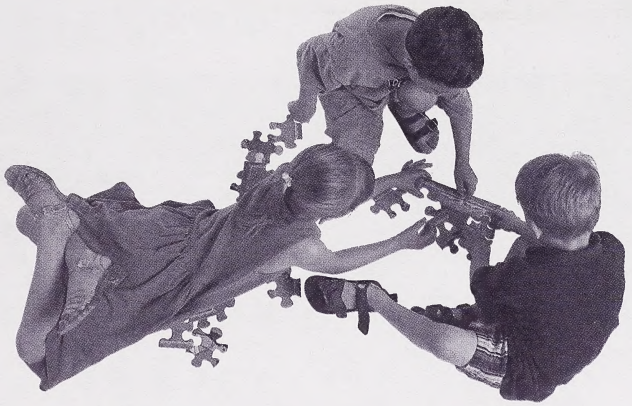
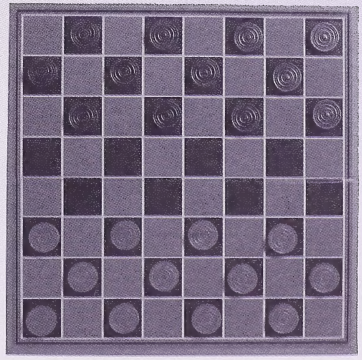
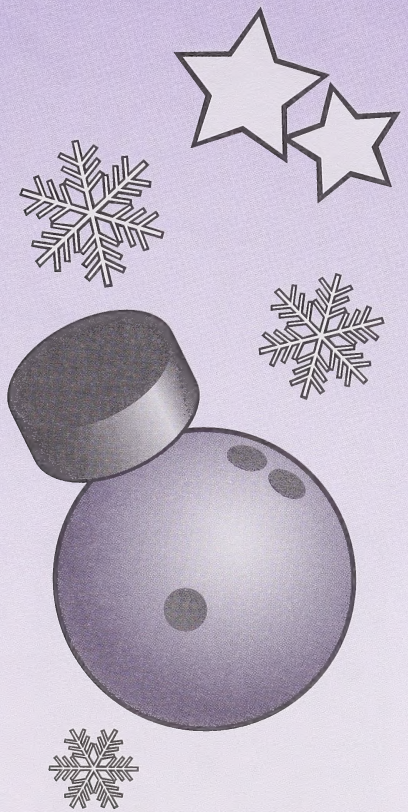
Super Shapes



Did you know that everything around you has a shape? Some things are round, some are square, and some things look like triangles.





What shape is the sun? What about a hockey puck? the sink in your bathroom? the wiener in your hot dog bun? your bicycle? the stars? snowflakes? your house? Everything around you has a shape.

In this module, you will be learning all about objects with different shapes and you will even get to build some. The study of shapes is called **geometry**. Get ready for some fun geometry time!

Day 1: Looking Back

Today you will see how well you can work with two-digit numbers. First, you will do some estimating. Can you guess how many items are in the picture without counting them?

Can you draw pictures of numbers?

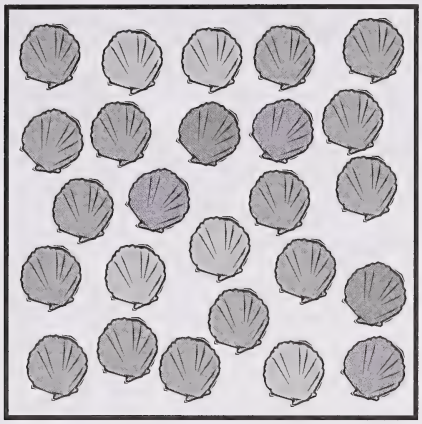
What are the rules for rounding numbers? Which number do you look at to round to the nearest ten?

After you have reviewed working with two-digit numbers, you will be ready to explore shapes.

Looking Back

How well do you remember what you learned in Module 2. Do you remember how to estimate? Look quickly at the pictures and decide about how many there are. Do not count the shells.

1.



a. Are there more than 20 shells?

Circle Yes or No.

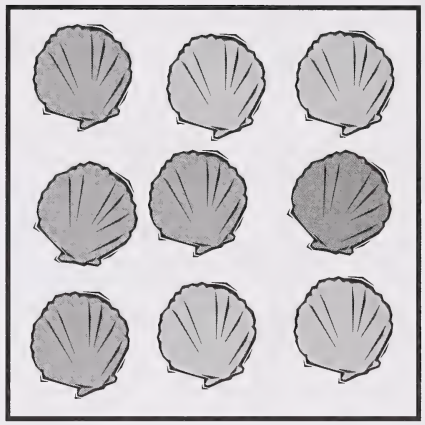
b. Are there fewer than 20 shells?

Circle Yes or No.

Count them. Did you make a good estimate?

Circle Yes or No.

2.



a. Are there more than 20 shells?

Circle Yes or No.

b. Are there fewer than 20 shells?

Circle Yes or No.

Count them. Did you make a good estimate?

Circle Yes or No.

Looking Back

Spread out about 80 items, such as buttons or cubes, on a table.

Look at the items spread out before you.

Estimate the number. ☐

Count the tens. How many are there? ☐

Count the ones left over. How many are there? ☐

What is the actual number of items? ☐

Is your estimate higher or lower than the actual count?

_____

Was your estimate a good one? Circle

or

.

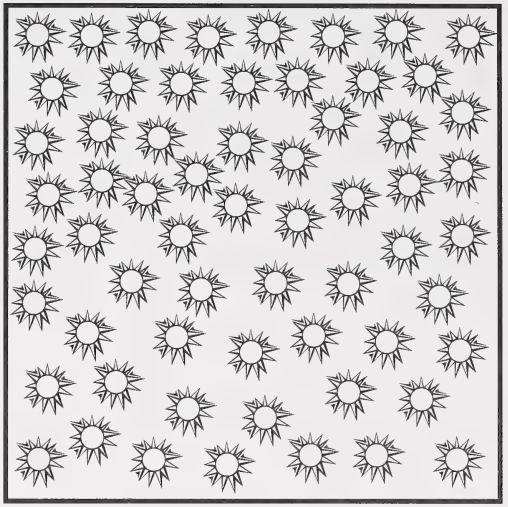
Why or why not? If your answer was close to the actual number, it was a good estimate.

Take the base ten blocks out of your Math Box.

Use your base ten blocks to show the number.

Draw a sketch of the number.

Estimate the number in each.



3. I estimate ☐ suns.

Circle the tens.

a. How many tens are there? ☐

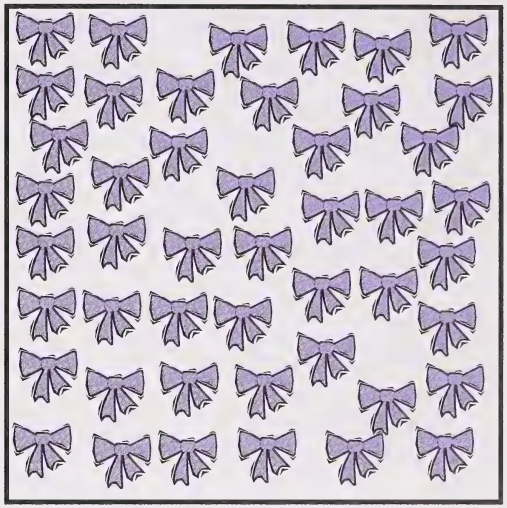
b. How many ones are there? ☐

c. Count the suns. How many are there in total? ☐

Is it higher or lower than your final estimate?

_____

4. I estimate ☐ bows.



Circle the tens.

a. How many tens are there? ☐

b. How many ones are there? ☐

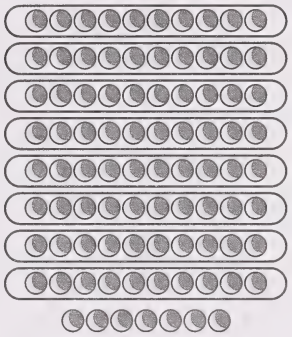
c. Count the bows. How many are there in total? ☐

Is it higher or lower than your final estimate? _____

Draw one of the numbers in three different ways.

5. Count and print the numbers for each.

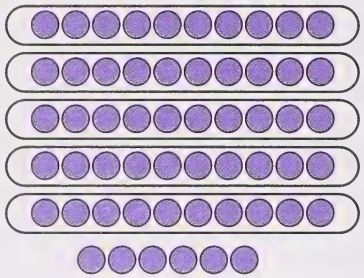
a.



tens ones

What is the number?

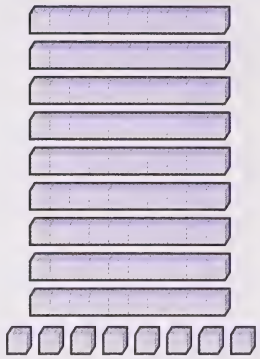
b.



tens ones

What is the number?

c.

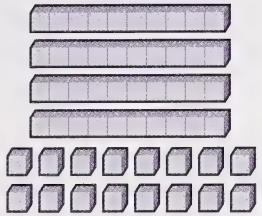


tens ones

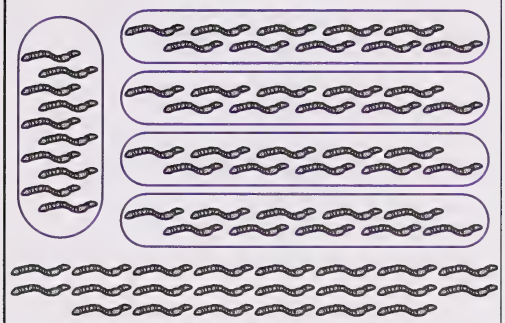
What is the number?

Print the number shown. Then draw the same number using more and fewer ones.

6.

a. actual number ☐	more ones	fewer ones
		
b. ☐ tens ☐ ones	c. ☐ tens ☐ ones	d. ☐ tens ☐ ones

7.

a. actual number ☐	more ones	fewer ones
 b. ☐ tens ☐ ones	c. ☐ tens ☐ ones	d. ☐ tens ☐ ones

8. Fill in the missing numbers. Use your blocks to help you.

a.

Tens	Ones	Number
3		60
	20	60
	50	60
6		60

b.

Tens	Ones	Number
	39	49
3		49
	9	49
	29	49

c.

Tens	Ones	Number
	47	77
4		77
	27	77
2		77

d.

Tens	Ones	Number
7		81
	1	81
3		81
	31	81

9. Round the numbers to the nearest ten.

a.

Number	Rounded To
43	
81	
19	
96	
67	

b.

Number	Rounded To
21	
34	
53	
78	
7	

c. What is the rule for rounding?

_____

_____

_____

d. What is the rounding rule for a number that has a **5** in the ones place?

_____

_____

10. Round these numbers to the nearest ten.

a.

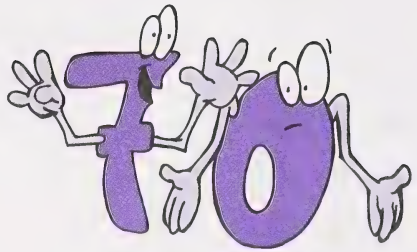
Number	Rounded To
55	
62	
85	

b.

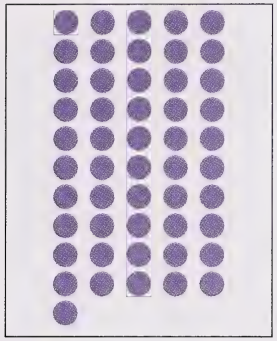
Number	Rounded To
95	
24	
35	

11. Circle the numbers that can be rounded to 70 in blue.

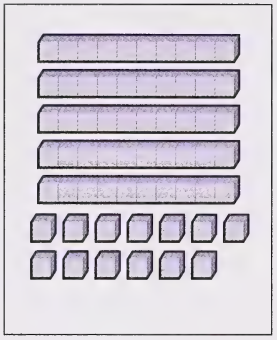
69	77	71	64	79	63	72	67
76	65	60	73	78	61	66	75
74	68	62					



12. Print the number.

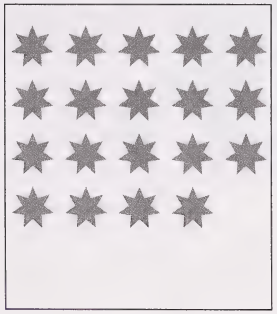
a. 

b. thirteen

c. 

d. Put the numbers in order from greatest to least.

13. Print the number.

a. 

b. fifteen

c. ten less than 30

d. Put the numbers in order from least to greatest.

14. Draw a set and print the number. You may use manipulatives to help you.

a. 73

b. Show the number on the place-value chart.

Tens	Ones

c. ☐ tens ☐ ones

d. Print the number. ☐

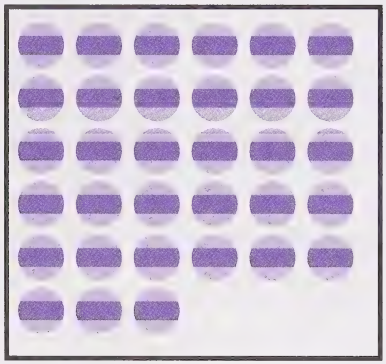
e. What does the **7** stand for?

_____

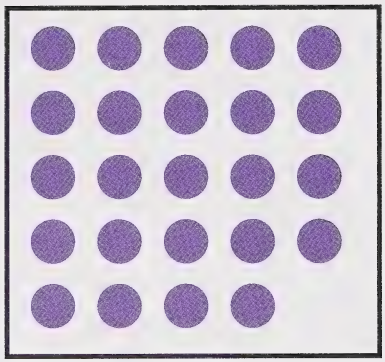
f. What does the **3** stand for?

_____

15. Print the order for these cards, from the least to the greatest number.

79	ten less than 28		ten more than 40	eleven	62	thirteen

16. Print the proper order for these cards, from the greatest to the least number.

seven	ten less than 19		88	sixteen	42	ten more than 76

Day 2: 2-D Shapes

Shapes are everywhere! You wear them. You even eat them! What shape tastes best?

Some shapes help you get around safely. They catch your attention. They tell you what to do and not do. A stop sign is very important. It has a shape that helps you see it.

Today you begin by looking at 2-D shapes. Do you know what 2-D shapes are?

It's time to find out.

2-D Shapes

Lesson 1

Jasper and Elena were visiting the city of Fort McMurray. They saw many different road signs on the streets and noticed that almost each sign looked different from the last one. These are some of the signs they saw.

Read each sign with the student and discuss the names of the shapes.

Elena thought it would be fun to describe the shapes. Jasper wanted to know the names of the shapes first.

Can you help Jasper with the names? See how many of the shapes below you can name.

_____

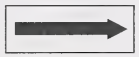
_____

_____

_____

Did you answer triangle, square, rectangle, and circle? If you did, you were right.

Can you name these shapes?



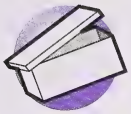
Did you answer circle, rectangle, square, and rectangle? If you did, you were right.

Lesson 2

Jasper told Elena he knows that **2-D** stands for **two-dimensional**. He also knows that something that is 2-D can be measured **two** ways. An object is called two-dimensional because it has two dimensions. That means it can be measured for length and width. Jasper also figured out that anything two-dimensional must be flat, because it can only be measured two ways.

Discuss 2-D objects. All 2-D shapes can be measured for length (how long) and width (how wide). Also, discuss anything too thin to be measured for depth at this level, such as paper.

Elena asked him what a 2-D object would be. Can you think of any 2-D objects?



Take your ruler out of your Math Box.

With your home instructor, measure the length of the rectangle below.

1. How long is it? ☐ cm

2. Measure the width. How wide is it? ☐ cm

3. Is the rectangle a 2-D object? Circle

or

. Why or why not? Tell your home instructor.

2-D Shapes

Name some other 2-D shapes that you know. Draw and name them.

The student should draw a circle, a square, and a triangle. Although this module is not about measurement, show the student that each shape can be measured in two ways—even the circle. The two ways are length and width.

Lesson 3

Jasper forgot some of the rules that name shapes. He and Elena decided to review the rules.

Square

1. a. How many sides does a square have?

   ☐

   b. Are all sides the same length?

   Circle Yes or No.

   c. Are there square corners?

   Circle Yes or No.

Rectangle

2. a. How many sides does a rectangle have? ☐

   b. Are all sides the same length?

   Circle Yes or No.

   c. Are two sides always longer than the other two sides?

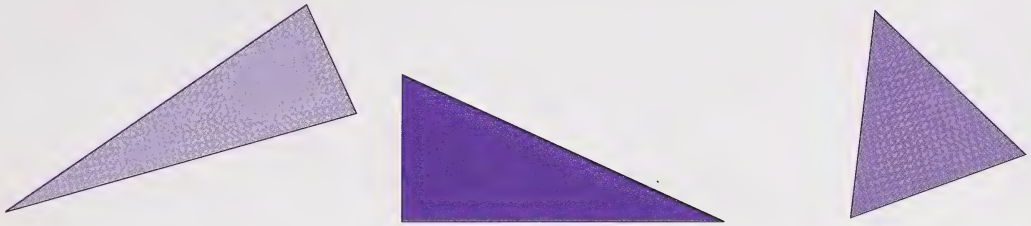
   Circle Yes or No.

   d. Are there square corners?

   Circle Yes or No.

2-D Shapes

Triangle



When discussing the sides of a triangle, point out that triangles can have no, two, or three equal sides. Tell the student that it has three corners, although they are not always square. Show how the corners of a square or rectangle are square, while the corners of the triangle are often not square—they are angled.

3. a. How many sides does a triangle have? ☐

b. Are all sides the same length?

Circle Yes or No or Sometimes.

c. How many corners are there? ☐

d. Are the corners square?

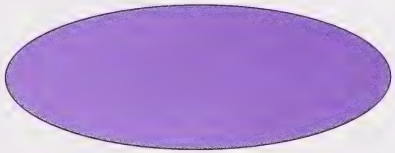
Circle Yes or No or Sometimes.

Circle

4. a. How many sides does a circle have? ☐

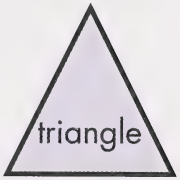
b. Are there square corners? Circle Yes or No.

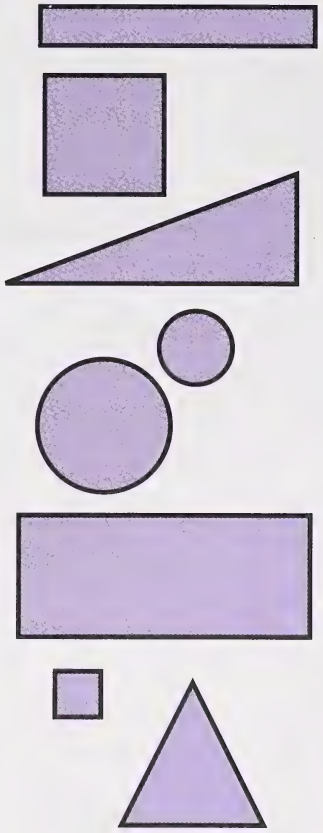
c. Is a circle perfectly round? Circle Yes or No.

d. Is this a circle?  Circle Yes or No.

Tell your home instructor why or why not.

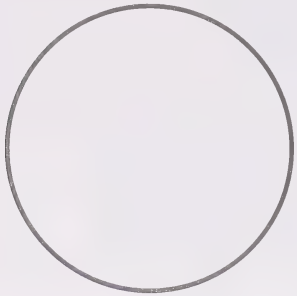
5. Draw lines to match the shapes on the left with the shapes on the right.



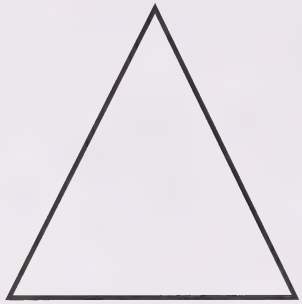


6. a. Draw a red circle inside the square.

b. Draw a purple rectangle inside the circle.



c. Draw a blue square inside the triangle.



d. Draw a green triangle inside the rectangle.

For more practice with 2-D shapes, go to the Extension Activities.

Day 3: The Shape of Things to Come

Now that you know what a 2-D shape is, you are ready to learn more about shapes.

You know that you have a face, but did you know that shapes have faces, too?

Also in Lesson 3 today, you will try to count the triangles you can see in the squares. It can be tricky!

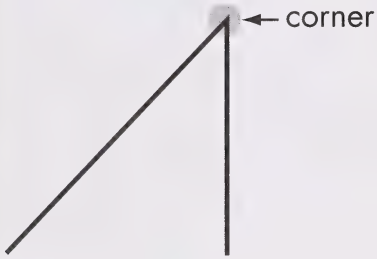
Are you ready?

Lesson 1

Jasper and Elena were having fun with shapes. They decided to practise some more with them.

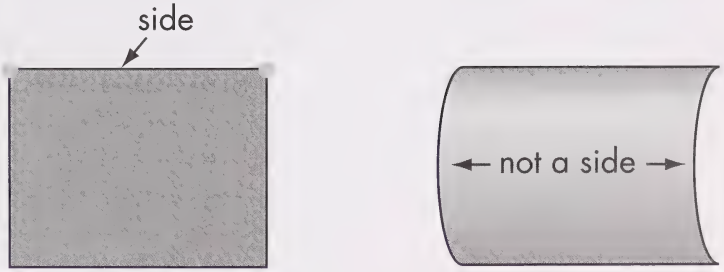
They first reviewed a few geometry terms.

Corner—a point where two sides meet



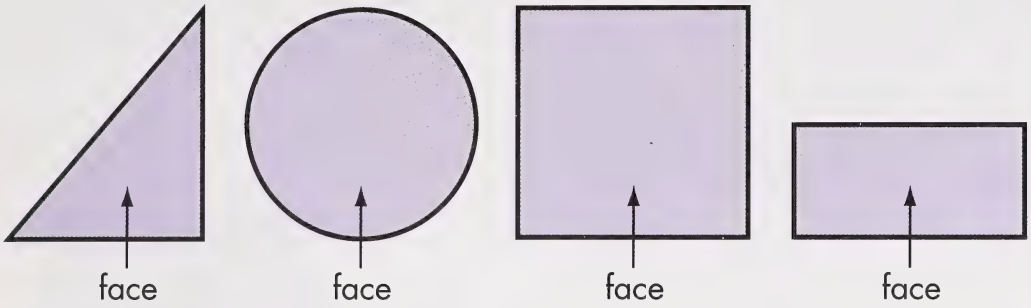
Discuss how curved sides are not real sides. They have to be straight to be called sides.

Side—a straight line that joins two corners



The Shape of Things to Come

Face—a flat surface
Because it is flat, a 2-D shape always has only **one** face.



Can you guess the 2-D shapes? Read the clues for each shape. See how many you can answer correctly. After you guess the shape, draw it in the box beside the clues.

1. • It has four sides.
   • The corners are square.
   • Two sides are longer than the other two sides.

   _____

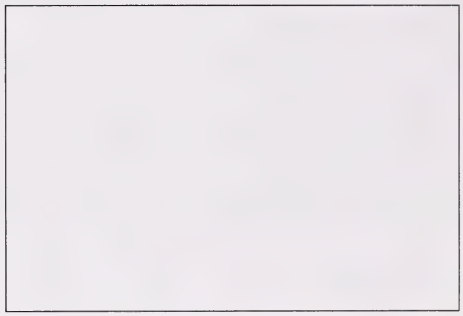
Use the cutout shapes in the Appendix for this lesson. After each guess, have the student draw the shape before showing it. Together, look at the shape and go over the clues for it to reinforce the concept.

2. • It has three sides.
   • It has three corners.
   • The corners are not always square.

   _____

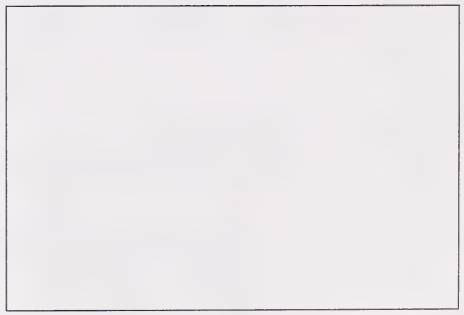
3. • It has no sides.
   • It has no corners.

   _____



4. • It has four sides.
   • The corners are square.
   • All four sides are equal.

   _____



Lesson 2

Pretend you are each of these 2-D shapes. Write down all you know about yourself. Your home instructor will ask you questions to help you.

1. Rectangle

a. _____

b. _____

c. _____

d. _____

2. Circle

a. _____

b. _____

c. _____

d. _____

3. Square

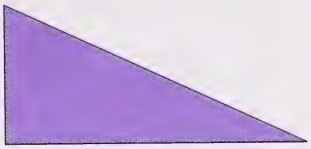
a. _____

b. _____

c. _____

d. _____

4. Triangle



a. _____

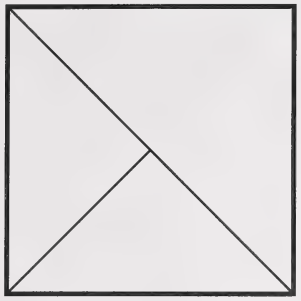
b. _____

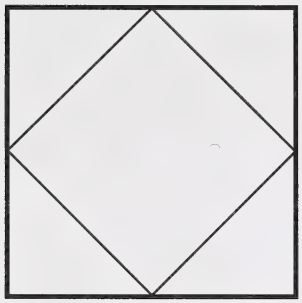
c. _____

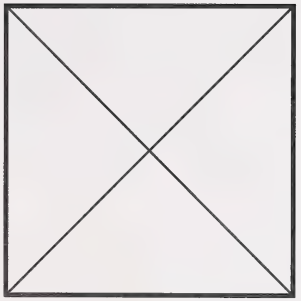
d. _____

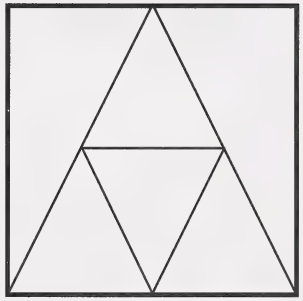
Lesson 3

How many triangles can you see in these squares? This can be tricky. Be sure to count all the triangles.

1.  ☐ triangles

3.  ☐ triangles

2.  ☐ triangles

4.  ☐ triangles

Day 4: New Shapes

As you know, you have not looked at all the possible shapes there are. You do not have to look far for more shapes.

Today you will do just that. You will check out more shapes. You will learn to name them. Some are named by the number of sides they have. That makes it easier to remember the name.

Lesson 1

Jasper knew the shapes of most of the road signs, but he noticed that one was different from the rest. It wasn't a circle, a square, a triangle, or even a rectangle. This is the road sign from Day 2 he was talking about.

1. Look at the school crossing sign.

a. How many sides does it have? ☐

b. How many corners does it have? ☐

c. Does this describe any shape you know?

Circle or .

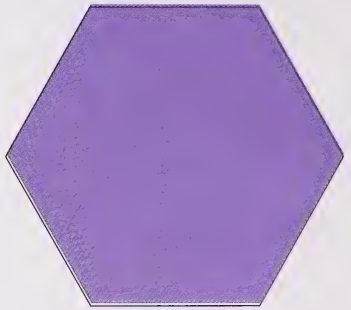
This is a new shape. It is called a pentagon. A pentagon has five sides. It is called a pentagon because in Greek, *penta* means five.

New Shapes

Discuss triangle (three sides), tricycle (three wheels), triceratops (three horns), trio (a group of three).

Many words come from the Greek language. *Tri* also comes from the Greek. It means three. Can you think of any words that begin with tri?

2. Here is another new shape.



a. How many sides does it have? ☐

b. How many corners does it have?

☐

c. Does this describe any shape you know?

Circle Yes or No.

This new shape is called a **hexagon**. It comes from the Greek word *hexa*. What do you think the word *hexa* means in Greek?

3. Jasper and Elena also wondered about the stop sign.

a. How many sides does it have? ☐

b. How many corners does it have? ☐

c. Does this describe any shape you know?

Circle Yes or No.

This new shape is called an **octagon**. It, too, comes from the Greek word *octa*. What do you think *octa* means? Can you think of any other words that begin with *octa*?

Discuss with the student that an octopus has eight arms and an octave has eight musical notes.

Jasper and Elena know they don't have to know about an octagon in Grade Two, but they were curious as to what shape the stop sign was. Now you know, too.

Lesson 2

Using the cutout shapes from the Appendix, give each one to the student and have him or her write the name of the shape.

Look at the face of each shape your home instructor gives you. Print its name.

_____ _____

_____ _____

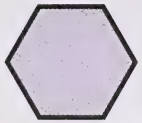
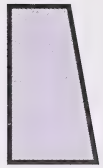
_____ _____

_____ _____

_____ _____

How many did you know? ☐

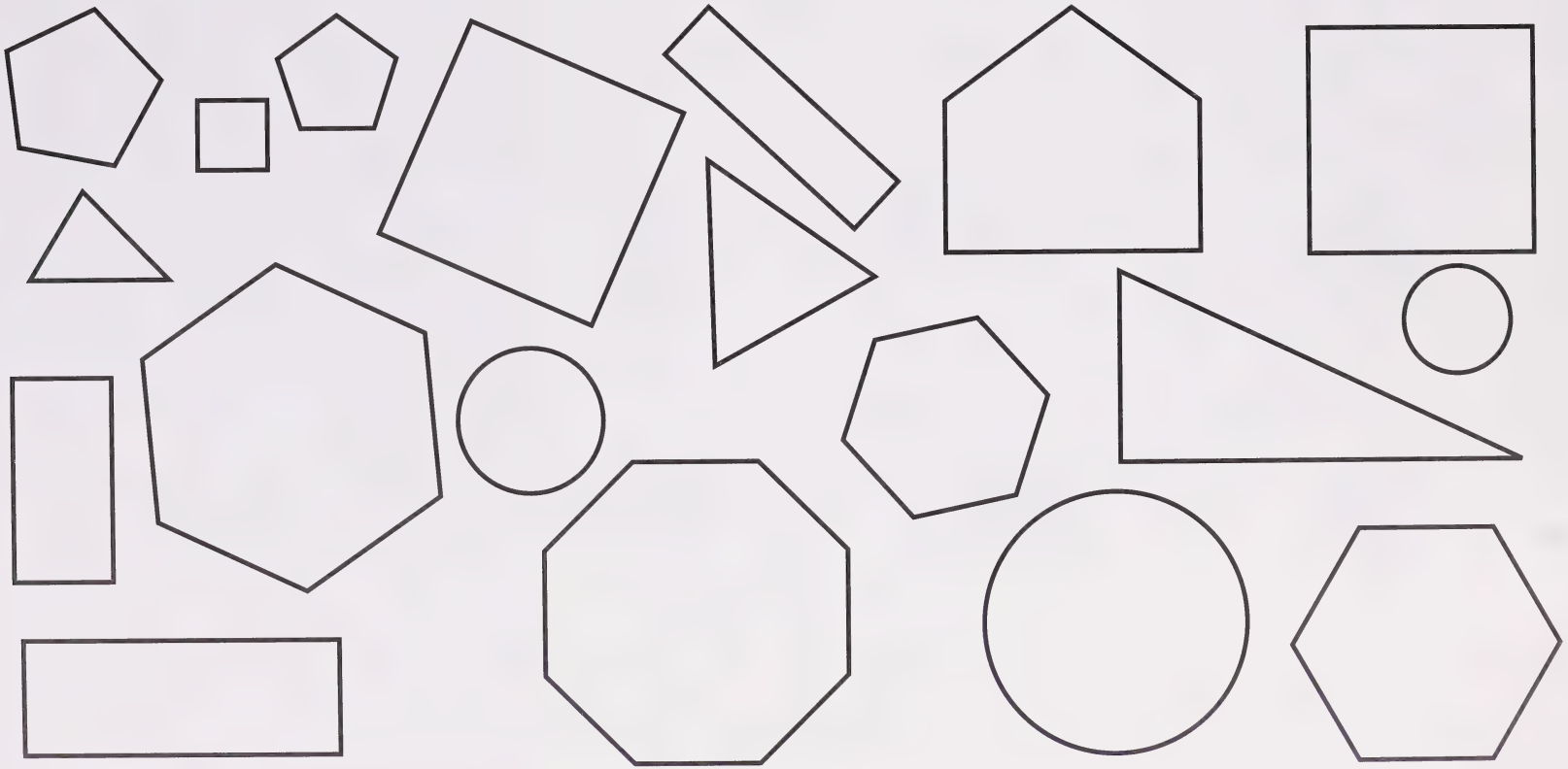
Print the number of sides and corners for each figure.

1. _____ sides _____ corners	4. _____ sides _____ corners	7. _____ sides _____ corners	10.  _____ sides _____ corners
2. _____ sides _____ corners	5. _____ sides _____ corners	8. _____ sides _____ corners	11.  _____ sides _____ corners
3. _____ sides _____ corners	6. _____ sides _____ corners	9. _____ sides _____ corners	12. _____ sides _____ corners

New Shapes

What did you notice about the sides and corners of the shapes? Tell your home instructor. Colour these shapes using the colours given below.

- triangles blue
- squares red
- hexagons green
- circles orange
- octagons yellow
- rectangles purple
- pentagons pink



New Shapes

Put one hand behind your back. Your home instructor will put a shape into your hand. Can you name the 2-D shape? Try to name the shape just by feeling it. Write down the name of each shape after you feel it.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

How many did you answer correctly? ☐

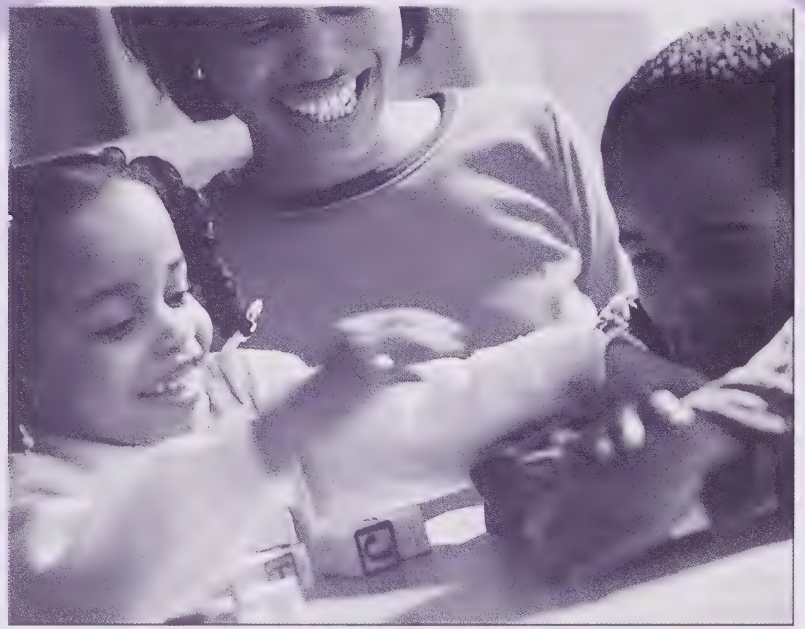
For more practice using shapes, go to the Extension Activities.

Go to Assignment Booklet 4A.

Put a shape into the student's hand to feel. Make sure he or she does not look at it before answering. Have the student feel the shapes several times, including the different triangles.

Remind the student that triangles can look very different from each other; but as long as they have three sides and three corners, they are always triangles. Review the shapes that were missed with the student.

Day 5: Taking Shape



Jasper and Elena began making patterns with their cutout shapes. Would you like to try making patterns? That is what you will be doing today.

To make patterns, you can use different shapes. Or, you can use the same shape over and over. You will draw the different patterns you create. It's time to see what you can do!

Lesson 1

Take your pattern blocks from your Math Box. You could also use the cutout shapes from your Student Folder.

While playing with their 2-D shapes, Jasper and Elena noticed that when you put them in a special way, they create neat patterns. They decided to have some fun making patterns with the 2-D shapes.

This is the pattern Jasper made with his blocks.

1. Using the same shapes as Jasper did, make the same pattern on your desk. Put them in one line.

   Print the names of the three shapes you used in the order you put them.

   _____, _____, _____

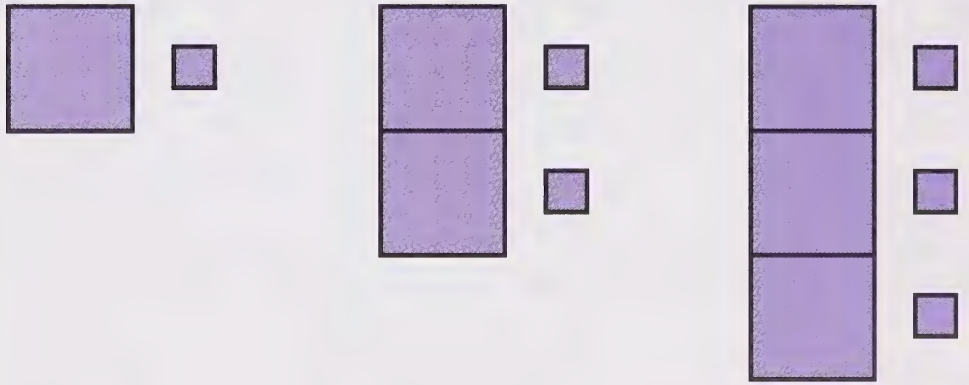
2. Now take more of the same shapes. Place them in a different pattern under your first line. How has your pattern changed?

   Print the name of the three shapes in the new order you put them.

   _____, _____, _____

Lesson 2

Look at these patterns. How is the second pattern different from the first one? How is the third pattern different from the second one?



Using the same number of squares, make patterns in different ways with your pattern blocks or cutouts.

The student should answer that one square of each size is added each time.

Ensure that the student is using two, four, and six squares for each of the three patterns and that they are arranged differently from the ones shown here. Have the student make and draw two different patterns.

Draw the new pattern you made here.

Using the same cutouts, make another set of patterns in a different way from the ones you just made and different from the patterns drawn on the other page. Draw the new pattern here.

Allow the student enough time to make several patterns.

Triangles are fun to work with. Using your triangle cutouts, experiment with making different patterns.

First take three triangles and make as many different patterns as you can.

How many different patterns did you make with three triangles?

Draw them here.

Now take four triangles and make as many different patterns as you can.

How many did you make? ☐ Draw them here.

Now do the same with five triangles.

How many different patterns did you make? ☐ Draw them here.

Do the same with six triangles.

How many different patterns did you make? ☐ Draw them here.

Lesson 3

Take the circle, rectangle, square, and triangle cutouts and build a pattern using all these shapes.

Taking Shape

Draw your pattern here.

Rearrange your pattern and draw it.

Ensure the student uses the same cutouts to make a new pattern.

Now make a shape using the circle, triangle, rectangle, and square cutouts. Draw it.

Rearrange your shape pattern and make a new pattern. Draw it.

Go to Assignment Booklet 4A.

Day 6: Cut It Out!

Do you like putting puzzles together? Puzzles can present interesting problems to solve.

Elena's father gave Elena and Jasper some shape puzzles to work with. One of these is called a tangram. Just like Elena and Jasper, you can have fun making tangram shapes.

Are you ready to cut out some puzzles?

After today, you may want to challenge some of your friends with these puzzles.

Lesson 1

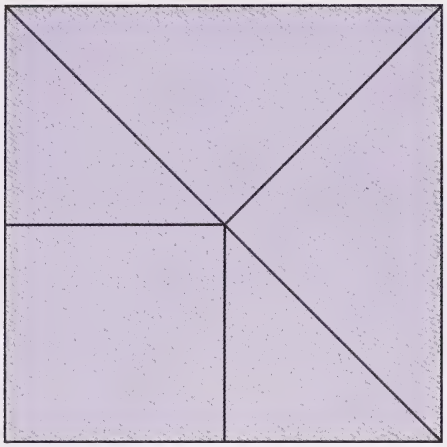
Jasper and Elena went skiing with their families at Fortress Mountain in Kananaskis Country.

After a day of skiing, they wanted to do something fun back at the hotel.

Jasper's father knew they were learning about 2-D shapes. He decided to give them a fun, yet challenging, activity with 2-D shapes.

Cut It Out!

This is what he gave each of them.



Jasper's father told Elena and Jasper to cut the shape apart.

They now had a shape puzzle. Jasper's father told them to put the parts together again, just like a puzzle.

Your home instructor will give you the same shape. Cut it apart. Then put the pieces back together to make the same shape.

Have the student talk about how he or she is reassembling the pieces. Discuss what clues the student can use to help put the shape back together. For example, the edges of the pieces that fit together are the same length.

Did you put the pieces back together like they were before you cut them out? Was it difficult to do?

Circle

or

.

What clues did you use to put the shapes back together? Tell your home instructor.

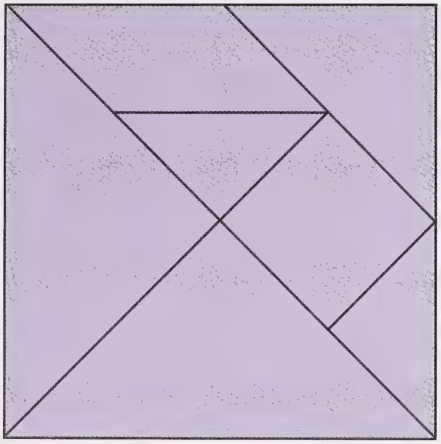
Using the same pieces make a different shape. Draw the new shape here.

Lesson 2

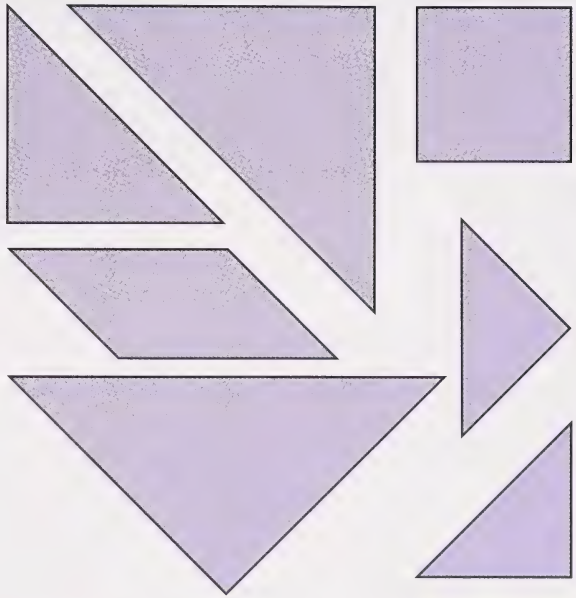
Jasper's father knew that Elena and Jasper were now ready to work with a **tangram**. They were both curious as to what a tangram is.

Jasper's father told them that a tangram is an ancient Chinese puzzle. It is always divided into seven shapes.

This is what it looks like before it is cut up.



These are cut-up puzzle pieces.



1. What are the seven shapes you see?

One of the shapes looks like a rectangle. It is really a **parallelogram**. It is a little different from a rectangle. It is the shape shown here.

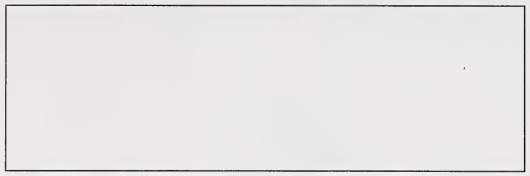
parallelogram

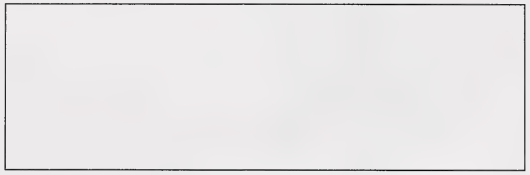
Print the name of each of the other shapes on the line and draw the shape in the box beside the line.

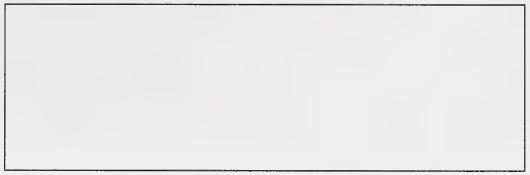
a. _____

b. _____

c. _____

d. _____ 

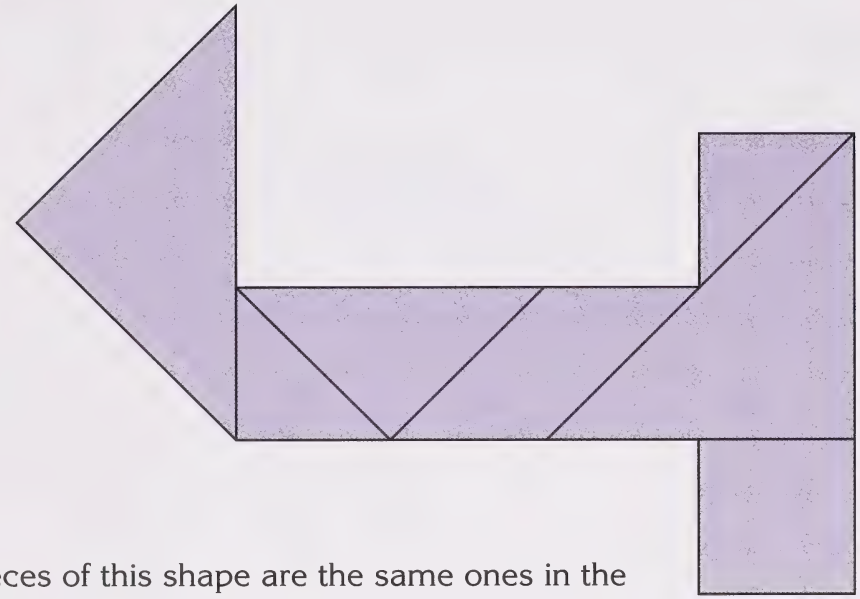
e. _____ 

f. _____ 

2. Most of the shapes are _____.

3. How many triangles are there? ☐

Jasper's father took the cut-up pieces of the tangram puzzle and put them into a different shape. This is the shape he made.



Can you see how the pieces of this shape are the same ones in the first tangram puzzle? Tell your home instructor which pieces of this shape match the ones on the first tangram puzzle.

Your home instructor will give you a tangram and tell you how to cut it out.

Make the following shapes with your tangram pieces on your own paper. Trace around each shape.

- Put the tangram pieces into the shape Jasper's father made. Tell your home instructor the clues you use as you make the shape.

- Put the pieces back into the original square shape.
- Make a new and different shape.
- Use four tangram pieces to make a shape.
- Use five tangram pieces to make a shape.
- Use six tangram pieces to make a shape.

Look at the tracings of the different shapes you made.

Make new and different shapes using four, five, six, and seven tangram pieces. Trace them on another piece of paper.

Compare these shapes with the shapes you made on the other paper. Are they very different?

Can you see the differences?

For more practice using tangrams, go to the Extension Activities.

Day 7: They're Twins

Elena's friends Maya and Nada are identical twins. They look exactly alike. Sometimes even Elena can't tell them apart.

Do you know any twins? Can you tell them apart? If you can't, they are probably identical.

Shapes can be twins, too. As you cut and fold shapes today, you will be looking for identical twins.

Some will be easy to spot. Others you have to look at very carefully. See if you can spot the identical twins.

They're Twins

Lesson 1

Sometimes people, or things, look so much alike they are called **identical**.

Look at the 2-D shapes your home instructor put on your desk. Some of them are identical. Find the ones that are identical. How can you be sure the shapes are identical?

Hand out a variety of 2-D cutouts to the student.

You can show that shapes are identical by placing one on top of the other. In geometry, another word for identical is **congruent**. When one shape is put on top of another and they are both the same shape, they are congruent. Say this word out loud. Print it here.

_____

Find a pair of rectangles and place one on top of the other. How do you know they are congruent? Tell your home instructor.

You know they are congruent because both have four sides with two sides longer than the other two, and they fit perfectly together.

They're Twins

Day 7

Find all the shapes on your desk that are congruent.

1. How do you know the circles are congruent?

2. How do you know the squares are congruent?

3. How do you know the triangles are congruent?

4. How can you make other shapes that are congruent to the matched shapes?

They're Twins

When you trace a 2-D shape onto a piece of paper, you make a congruent shape, because you know the new shape will be exactly like the shape you traced.

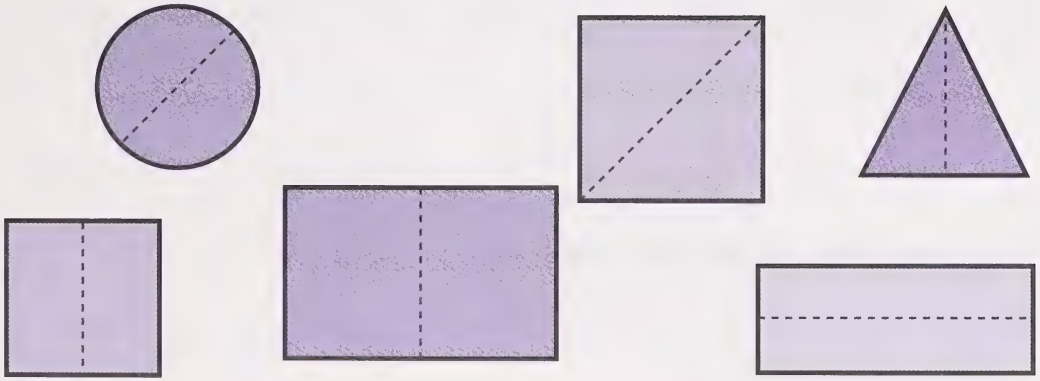
Make congruent shapes of a circle, a triangle, a square, and a rectangle by tracing them onto a piece of paper. Then cut out the new shapes.

Trace a shape onto paper and cut it out. Have the student trace the shapes on a piece of paper and then cut them out.

Lesson 2

You can make congruent shapes another way. Look at these shapes. Notice the dotted lines in each one? The dotted lines show you where to fold the shapes to make them congruent.

Place the cutout rectangle, circle, triangle, and square on the student's desk.



They're Twins

1. Fold the rectangle to make two congruent shapes.

   a. What shape are they? _____

   b. Why are they congruent? _____

   _____

   c. You can fold the rectangle a different way and still make two more congruent shapes. Try it.

   What shape are they? _____

2. a. Fold the square piece of paper to make two congruent shapes.

   What are the shapes? _____

   b. Now fold these congruent shapes to make two congruent shapes.

   What are they now? _____

   c. Now fold these congruent shapes to make two more congruent shapes.

   What are they? _____

3. The square piece of paper you started with turned into several different shapes when folded. List the shapes starting with the original square.

   a. _____ c. _____

   b. _____ d. _____

   e. How do you know all those shapes are congruent?

   _____

   _____

4. Use the same square piece of paper again to make two congruent shapes. This time, fold the square a different way. Fold it on the **diagonal**. Your home instructor will show you what that means.

   a. What congruent shapes did it make?

   _____

   b. Now fold the triangle shape to make two congruent shapes.

   What are they now? _____

   c. Now fold it again to make two congruent shapes. What are they? _____

d. When you folded the square piece of paper into congruent shapes this time, did the square change into many different shapes? Circle

or

.

e. How many shapes did it fold into? ☐

f. What is that shape? _____

g. How do you know all the triangles were congruent?

_____

_____

5. a. Fold the circle to make two congruent shapes. Why are they congruent? _____

_____

Explain to the student that the circle can be folded many times to make two congruent shapes. The folds must always be in half to be congruent. Show how other folds will not make congruent shapes.

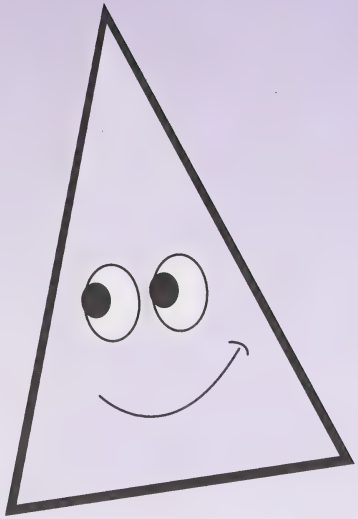
They're Twins

b. Can you fold the circle a different way and still make two congruent shapes? Circle Yes or No.

6. a. Fold the triangle to make two congruent shapes. Why are they congruent? _____

_____

Experiment folding the triangle in different ways.



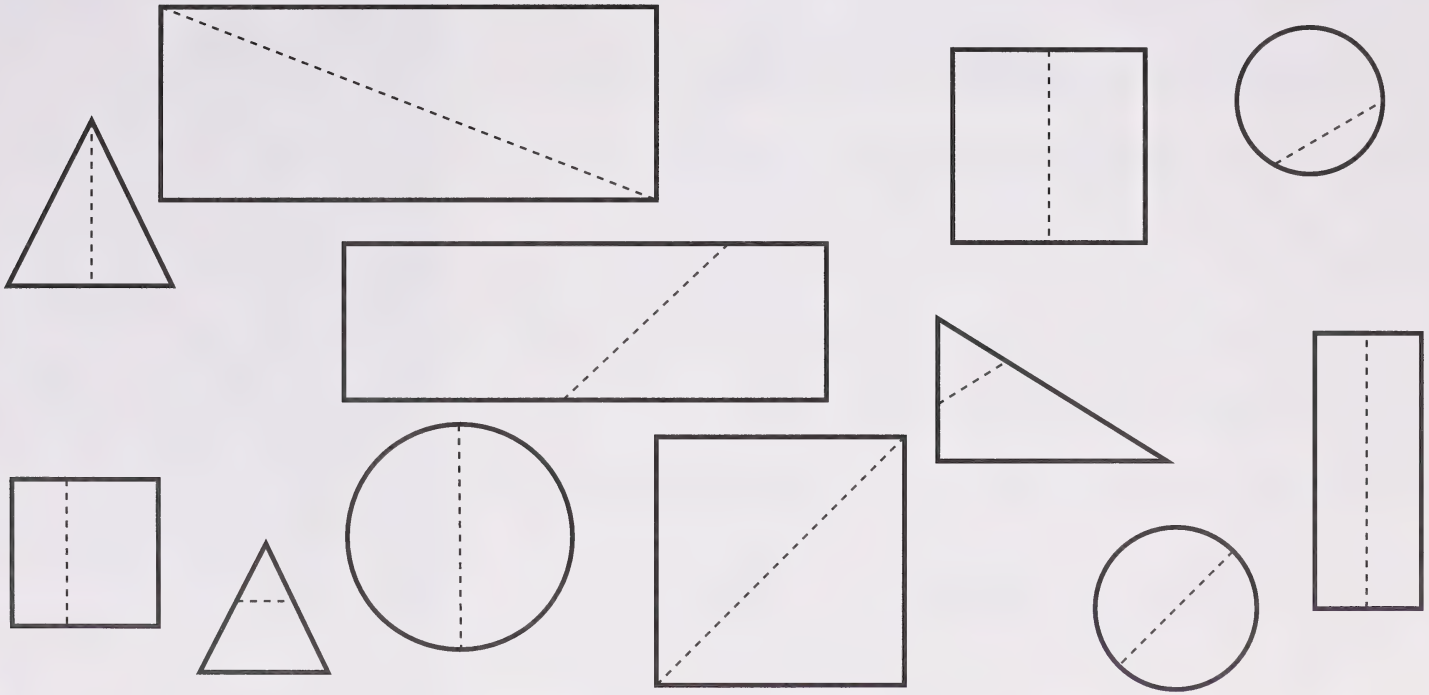
b. Can you fold the triangle a different way and still make two congruent shapes? Circle Yes or No.

Tell your home instructor why or why not.

They're Twins

Day 7

Colour the pictures blue that are folded into two congruent shapes. Colour the pictures yellow that are not folded into congruent shapes.



Go to Assignment Booklet 4A.

Day 8: 3-D Solids

2-D shapes were easy. Now, just like Elena and Jasper, you are ready for 3-D solids.

As you know, most objects have more than just two dimensions. When objects have only length and width, they are called two dimensional. But what about solid objects that have more than two dimensions?

They all have different names. You know that you don't call a ball a circle. So what do you call the shape of a ball?

That's what you will find out today. You'll also discover much more about solid objects.

Lesson 1

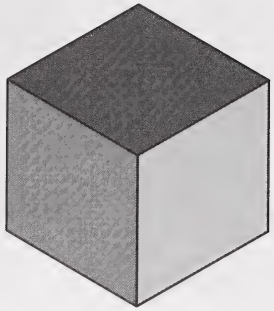
Jasper and Elena were watching a soccer game in Spirit River. After his study of 2-D, or two-dimensional, shapes, Jasper pointed to the soccer ball and told Elena that it was a circle. Elena wasn't so sure. She knew it looked like a circle, but there was more to it than that. It wasn't flat like the 2-D shapes. She wondered if this was what is called a 3-D object.

When they got back home, Jasper and Elena's home instructor told them that the soccer ball was indeed a 3-D, or three-dimensional, object. They asked their home instructor to tell them about 3-D objects. These are the things they learned.

3-D Solids

Look at the solid shape your home instructor just gave you. How would you describe the shape of this solid?

This solid is called a **cube**. Can you think of any objects that look like this?



Print the name of the solid. _____

Print the names of the objects you thought of that have the same shape. _____

_____

Look around the room you are in. What can you find that looks like a cube? _____

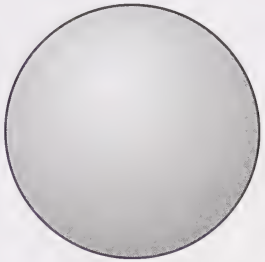
Have the set of geometric solids lined up in front of the student. Give the student the cube; then allow the student several minutes to describe the shape of each solid before answering the questions. Continue giving the student the solid indicated until each one has been described.

Help the student realize that objects such as sugar cubes, dice, and alphabet blocks are cubes.

Draw a cube in the rectangle.

Look at the solid shape your home instructor just gave you. How would you describe the shape of this solid?

This solid is called a **sphere**. Can you think of any object that looks like this?



3-D Solids

Print the name of the solid. _____

Print the names of the objects you thought of that have the same shape. _____

_____

Look around the room you are in. What can you find that looks like a sphere? _____

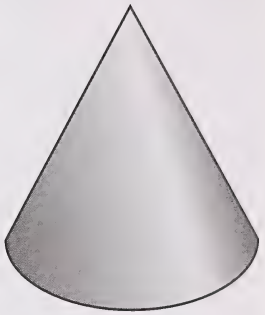
_____

Draw a sphere in the rectangle.

Help the student realize that objects such as balls and oranges are spheres.

Look at the solid shape your home instructor just gave you. How would you describe the shape of this solid?

This solid is called a **cone**. Can you think of any object that looks like this?



Help the student realize that objects such as ice cream cones, party hats, megaphones, and teepees are cones.

Print the name of the solid. _____

Print the names of the objects you thought of that have the same shape. _____

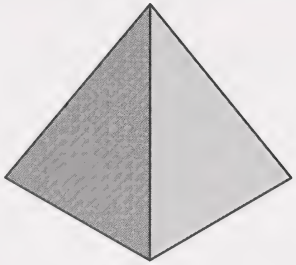
_____

Look around the room you are in. What can you find that looks like a cone? _____

_____

Draw a cone in the rectangle.

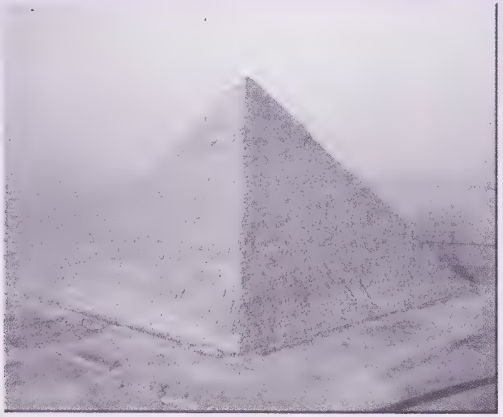
Look at the solid shape your home instructor just gave you. How would you describe the shape of this solid?



This solid is called a **pyramid**. Can you think of any object that looks like this?

Print the name of the solid. _____.

Help the student realize that objects such as pyramids, tents, and tower roofs are pyramids.



Print the names of the objects you thought of that have the same shape. _____

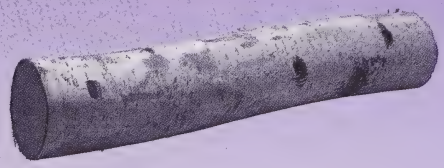
_____

Look around the room you are in. What can you find that looks like a pyramid? _____

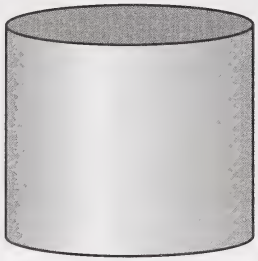
_____

Draw a pyramid in the rectangle.

3-D Solids



Look at the solid shape your home instructor just gave you. How would you describe the shape of this solid?



This solid is called a **cylinder**. Can you think of any object that looks like this?

Print the name of the solid. _____

Print the names of the objects you thought of that have the same shape. _____

_____

Look around the room you are in. What can you find that looks like a cylinder? _____

_____

Help the student realize that objects such as paper-towel rolls, toilet-paper rolls, soup cans, unsharpened pencils, spools of thread, and hockey pucks are cylinders.

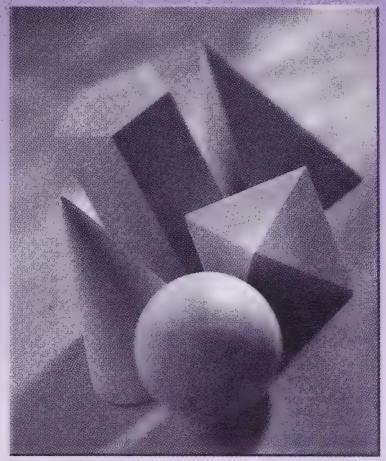
Draw a cylinder in the rectangle.

3. Now Jasper and Elena could give the 3-D name for the soccer ball.

What is it? _____

3-D Solids

Lesson 2



1. How many three-dimensional solid shapes did you just learn about? ☐

   Print their names.

   _____

   _____

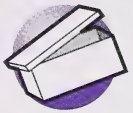
   _____

   _____

   _____

Can you think why these shapes are called 3-D? Tell your home instructor.

Tell the student that these solids have three dimensions, meaning they can be measured three ways. Demonstrate this with the cube. Measure the length and width of a face; then show how the depth can be measured. Although the student does not need to know the term *depth*, it can be mentioned now.



Take out your ruler from your Math Box.

2. Measure the length and width of one face of the cube. Then measure how deep the cube is.

   a. How many ways can you measure a 3-D object? ☐

   b. Why do you think it is called a three-dimensional object?

   _____

   _____

Put one solid shape at a time into a bag without the student seeing it. The student must identify the solid by touch only.

Your home instructor will put a 3-D shape into a bag. Put your hand into the bag and see if you can tell what the shape is just by feeling it. Talk about the shape as you are touching it. No peeking!

Take the shape out of the bag and look at it. Did you guess it?

3-D Solids

Print the name of each solid shape after you have identified it.

_____

_____

_____

_____

_____

How many did you get right? ☐

Try again with the ones you couldn't figure out.

Have the student repeat the procedure with the shapes he or she had difficulty with.

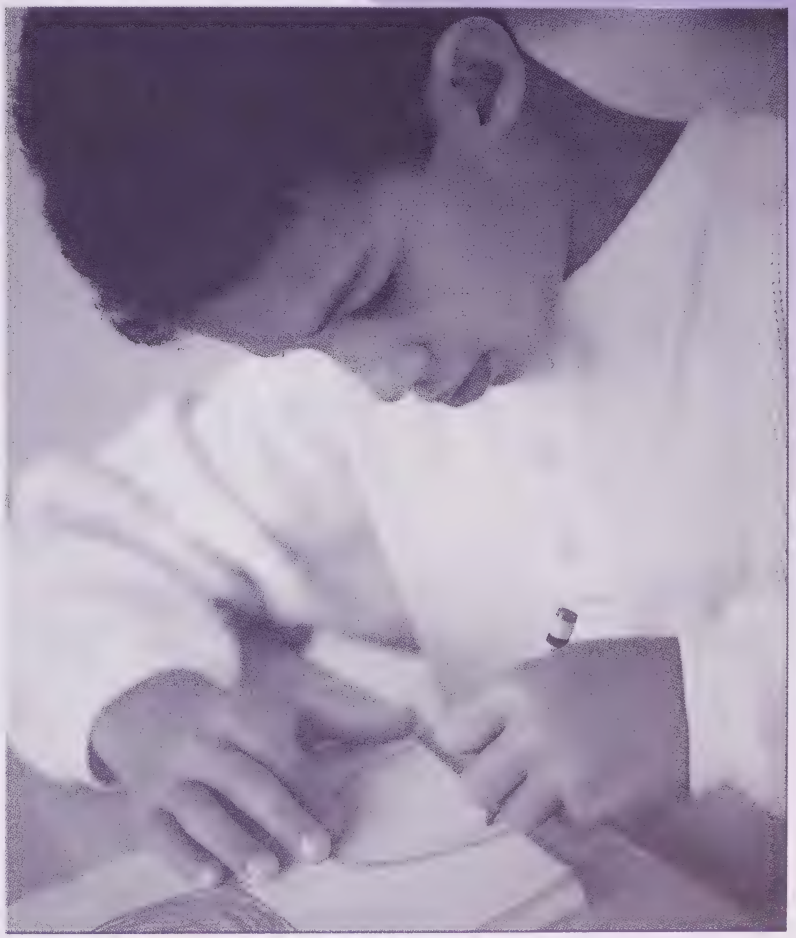
For more practice using 2-D shapes and 3-D solids, go to the Extension Activities.

Day 9: Shape Up

How many faces do you have? You're right, you only have one face. The solid shapes have more than one face. Do you remember what a face on a solid object is?

Today you will be drawing many shapes. You will be drawing the faces of many solid shapes. That way, you can check to see how many faces each solid shape has.

If you are ready to "shape-up," begin by comparing solid objects for faces.



Lesson 1

Do you remember what a face is?

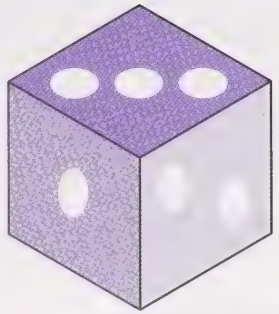
A face is a flat surface.

You are going to carefully examine each of the solid shapes. You will trace the faces of each solid shape. Pick a different crayon to trace the faces of each solid shape.

Provide the student with crayons and paper. Discuss the answers to the questions for each solid with the student. Ensure the student traces every face on the solid.

Make sure you trace each flat surface, or face, of the solids.

Before you begin, think how you are going to make sure that you trace every face on the cube. Can you think of a way?



1. Pick up the cube. Look at it carefully. If you traced each of its faces, what shapes do you think you would make?

_____

On the paper your home instructor gave you, draw the cube to show what you think.

Shape Up

Now trace around each face of the cube to show the shapes.

2. a. How many faces did you trace? ☐

   b. What were the shapes of the faces?

   _____

   c. Were they all the same? Circle Yes or No.

3. Pick up the cylinder. Look at it carefully. If you traced each of its faces, what shapes do you think you would make?

   _____

4. On the paper your home instructor gave you, draw the cylinder to show what you think.

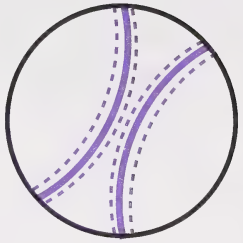
   Now trace around each face to show the shapes.

   a. How many faces did you trace? ☐

b. What were the shapes of the faces?

_____

c. Were they all the same? Circle yes or no.



5. Pick up the sphere. Look at it carefully. If you traced each of its faces what shapes do you think you would make?

_____

6. On the paper your home instructor gave you, draw the sphere to show what you think.

a. Does the sphere have faces? Circle yes or no.

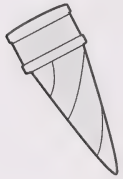
b. What is the shape of the sphere?

_____

c. How is the sphere different from the other solids?

7. Pick up the cone. Look at it carefully. If you traced each of its faces, what shapes do you think you would make?

8. On the paper your home instructor gave you, draw the cone to show what you think.



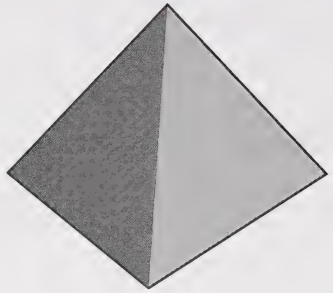
Now trace around each face to show the shapes.

a. How many faces did you trace? ☐

b. What was the shape of the face?

c. How is the cone different from other solids?

9. Pick up the pyramid. Look at it carefully. If you traced each of its faces, what shapes do you think you would make?



_____

10. On the paper your home instructor gave you, draw the pyramid to show what you think.

Now trace around each face to show the shapes.

a. How many faces did you trace? ☐

b. What were the shapes of the faces?

_____ _____

c. Were they all the same? Circle

or

.

d. How were they different? _____

_____

Lesson 2

Look at each of the drawings of the faces you made of the solids.
Answer the following questions about them.

1. How is the cube similar to (the same as) the pyramid?

_____

_____

2. How is the cube different from the pyramid?

_____

_____

3. How is the cone similar to (the same as) the cylinder?

_____

_____

4. How is the cone different from the cylinder?

_____

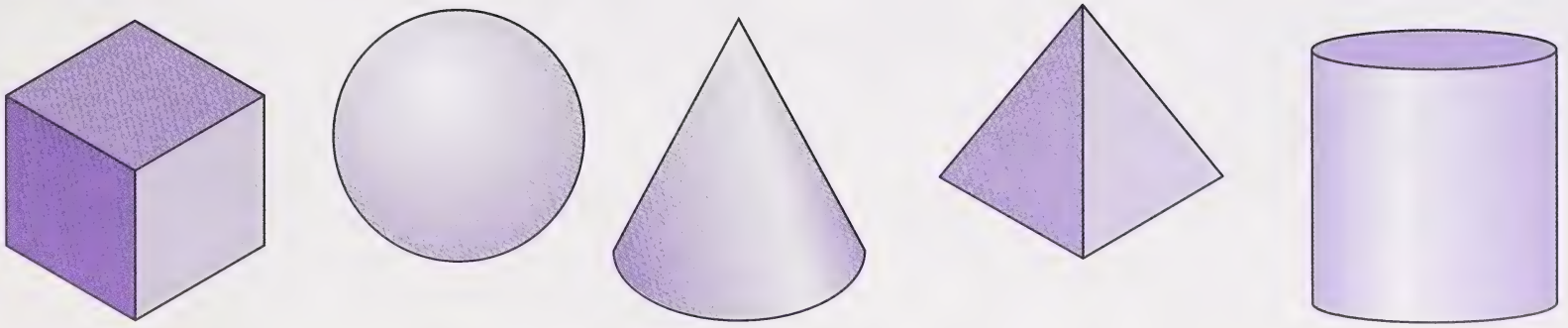
_____

5. How is a sphere different from the other solids (cube, pyramid, cone, and cylinder)?

_____

_____

Go to Assignment Booklet 4A.



Day10: Geometry Walk

Elena and Jasper had fun doing a geometry walk when they visited Jasper's grandmother. Just like Jasper and Elena, you will look for geometric solids today.

Are you ready for some exercise while you do your math today? You will have to go for a walk to do today's work.

You will look for 3-D solids that can be found all around you.

Which geometric solid do you think you will see most often?

Geometry Walk

Lesson 1

Jasper and Elena were visiting Jasper's grandmother in Vegreville, Alberta. They were telling her about the 2-D and 3-D shapes they were studying. Jasper's grandmother wanted to show them how these shapes can be found all around them, in their homes and in the environment.

She took them for a long walk in the town. They visited some shops, saw the Pysanka (Ukrainian Easter Egg), and walked in a treed area near Jasper's grandmother's home. Later, they went grocery shopping and found many examples of the solid shapes they had been studying.

Take a walk now with your home instructor. Take a pad of paper and pencil with you. You will want to draw and list all the 3-D solids you see as you go along.

Geometry Walk

Have the student write which 3-D solid shape the objects resembled (cube, sphere, and so on). Some of the objects might be trees (cylinders), mailboxes (cylinders), soccer balls (spheres), and so on.

Lesson 2

Did you see many objects that had 3-D solid shapes? List the objects you saw. Then write the name of the solid shape it looks like. Use a separate piece of paper to write them on if you run out of room here.

The object I saw	It looks like a . . .
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Geometry Walk

Which geometric solid did you see most often on your walk?

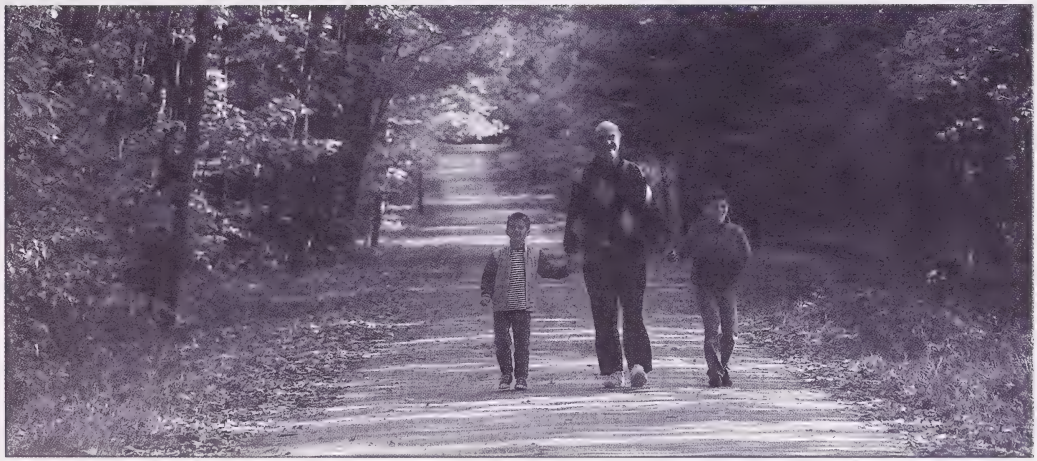
_____

How are some of the geometric solids similar to the everyday objects? _____

_____

How are they different? _____

_____



Geometric solids are different from the objects in that some of the everyday objects do not have faces. For example, an ice cream cone is open-faced, as are toilet-paper rolls and paper-towel rolls.

Day 11: Solids in 3-D

Riddles are fun. To begin today, you will use all you have found out about solid shapes to answer some riddles.

Then you will fill all the information you know about solid shapes into a chart.

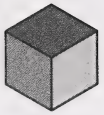
Last of all, you will play a game. The game will give you practice in matching 2-D shapes to 3-D solids. You will also write the names of the solid shapes.

Playing a game is a fun way to learn more.

Lesson 1

Did you enjoy your geometry walk from the last day? You are familiar now with how 3-D solids resemble everyday objects. See if you can identify the solid shape with the everyday object.

Match the solids to their names and the everyday objects.



pyramid

cylinder

cone

sphere

cube

Lesson 2

You can refer to the work you did on Day 3 to help you with these riddles.

Print the name of the solid shape to answer the riddles.

1. I have no faces. _____

2. I have all square faces. _____

3. I am shaped like a pop can. _____

4. I have six faces. _____

5. I have five faces. _____

6. I am shaped like a ball. _____

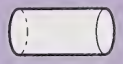
7. I have some triangular faces. _____

8. I have one circular face. _____

9. I have two circular faces. _____

Lesson 3

Fill in the chart to show what you know about the faces of geometric solids. Use your geometric solids or everyday objects to help you.

Shape	How many square faces?	How many circular faces?	How many triangular faces?	How many rectangular faces?
 cylinder				
cube				
pyramid				
sphere				
cone				

Lesson 4

Take the Spin Game out of your Student Folder.

Play the Spin Game with your home instructor. You will need 20 markers, like bingo chips or buttons. Spin the paper clip on the spinner. Name the shape it stops on. Find the shape on the gameboard and print the name of the shape on the line under the picture. Then put your marker on it. Keep playing until all the gameboard is covered.

For more practice identifying 3-D solids, go to the Extension Activities.

Go to your Assignment Booklet 4B.

Day 12: On the Edge

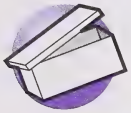
Right now you are on the edge of learning even more about 3-D solids. You already know about the faces on geometric solids.

No, they don't have ears or hair, but they do have other features. How about corners and edges?

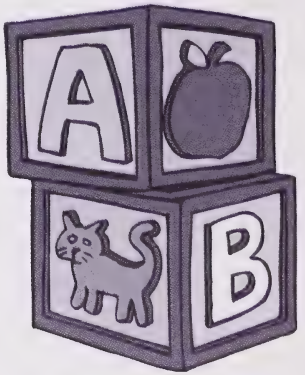
There is just one catch. The word *corners* isn't used to describe 3-D solids. You will learn a new word for corner. Then you will be able to compare the solids to see how they are different or the same.

On the Edge

Lesson 1

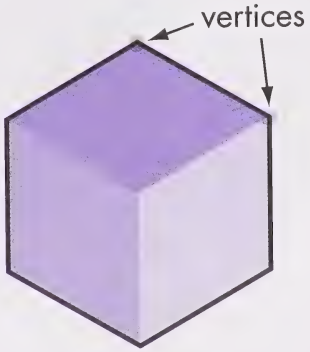


Get your crayons. You will also need your geometry set of solids today.



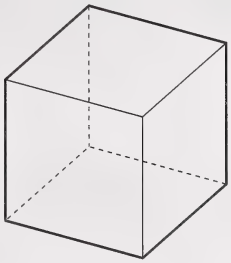
Jasper and Elena were playing with some alphabet blocks. One block accidentally hit Jasper in the head. "Ouch, that hurts!" Jasper noticed how sharp the corner of the block was. Elena looked closely at the block and was surprised to see how many corners it had.

Jasper was hurt by the corner of a cube. In geometry, corner has another name—**vertex**. One corner is a vertex, two or more corners are called **vertices**. It's a good thing Jasper was hurt by only one vertex!



On the Edge

1. See how many vertices a cube has. Look at the cube. Count the vertices out loud, marking each one with a crayon as you count it. At the same time, your home instructor will tally them in the box.



Tally Box

a. Count the tally marks. How many are there? ☐

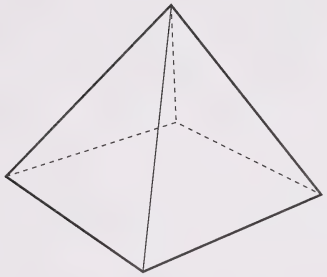
b. How many vertices does a cube have? ☐

Now you will count the vertices of each geometric solid the same way you did the cube.

2. Does the pyramid have vertices?

Circle or .

Count the vertices as your home instructor tallies them.



Tally Box

a. Count the tally marks.

How many are there? ☐

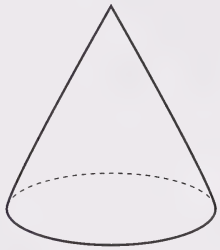
b. How many vertices does a pyramid have?

☐

3. Do you think the cone has the same number of vertices as the pyramid?

Circle or .

Count the vertices.



Tally Box

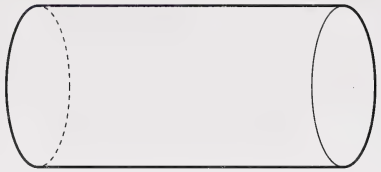
a. Count the tally marks.

How many are there? ☐

b. How many vertices does a cone have? ☐

4. a. Does the cylinder have vertices?

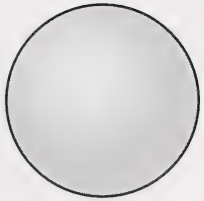
Circle Yes or No.



b. Why or why not? _____

5. a. Does the sphere have vertices?

Circle Yes or No.



b. Why or why not? _____

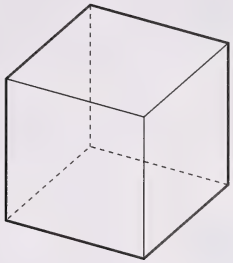
6. What is a vertex? _____

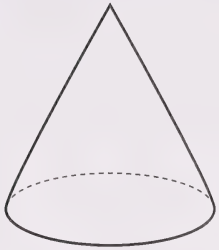
_____

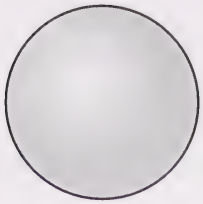
7. What are vertices? _____

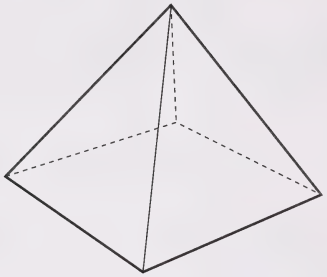
_____

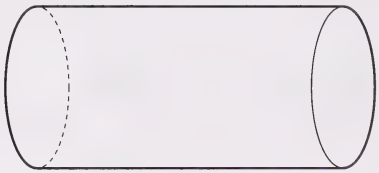
8. How many vertices do these solids have?

a. cube  ☐

b. cone  ☐

c. sphere  ☐

d. pyramid  ☐

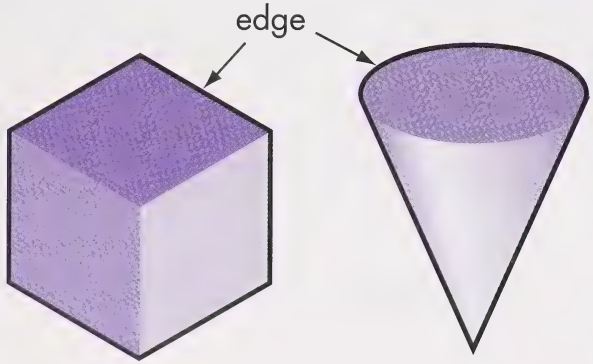
e. cylinder  ☐

On the Edge

Lesson 2

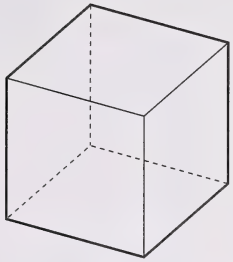
Elena and Jasper were both curious to learn more about 3-D solids. They looked again at the cube and asked their home instructor about its other parts.

Your home instructor just pointed to the **edge** of the cube. Did you figure out that's what it is called? An edge is where two faces meet. An edge can be straight, like in a cube, or curved, like in a cylinder or a cone.



Pick up the cube and point to the edges. Ask the student what he or she thinks it is called. Read the text with the student and show how the surfaces meet at the edge. Pick up the cone and cylinder to show how the edges on them are curved, not straight, as in the cube.

1. Count the number of edges the cube has. Count each edge out loud and mark it with a crayon. Your home instructor will tally the count.



Tally Box

a. Count the tally marks. How many are there?

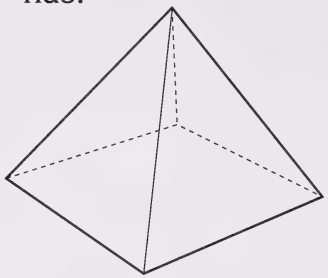
b. How many edges does a cube have?

c. How many vertices does a cube have?

d. Are the edges straight or curved?

_____

2. Count aloud the number of edges the pyramid has.



Tally Box

a. Count the tally marks. How many are there?

b. How many edges does a pyramid have?

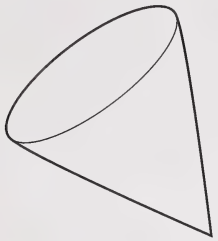
c. How many vertices does the pyramid have?

d. Are the edges straight or curved?

_____

On the Edge

3. Count aloud the number of edges the cone has.



Tally Box

a. Count the tally marks. How many are there?

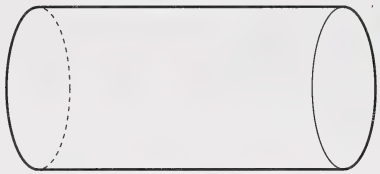
b. How many edges does a cone have?

c. How many vertices does the cone have?

d. Is the edge straight or curved?

_____

4. Count the number of edges the cylinder has.



Tally Box

a. Count the tally marks. How many are there?

b. How many edges does a cylinder have?

c. How many vertices does the cylinder have?

d. Are the edges straight or curved?

_____

5. a. Does a sphere have edges?

Circle Yes or No.

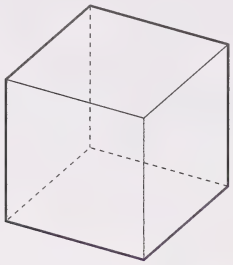
b. Why or why not? _____

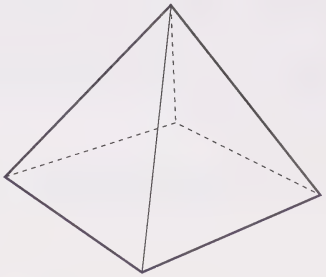
_____

c. What is an edge? _____

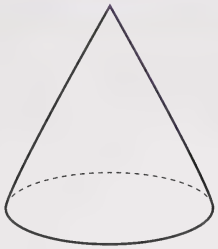
_____

6. How many edges do these solids have?

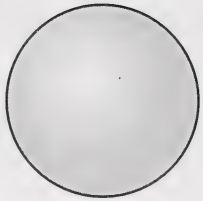
a. cube  ☐

b. pyramid  ☐

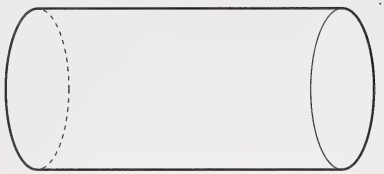
c. cone



e. sphere



d. cylinder



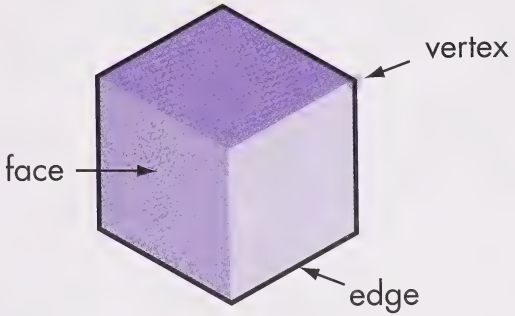
7. Compare the number of edges to the number of vertices. Fill in the chart with the information you collected. Look back to Lesson 1 for the number of vertices.

Shape	Edges	Vertices
cube		
pyramid		
cone		
cylinder		
sphere		

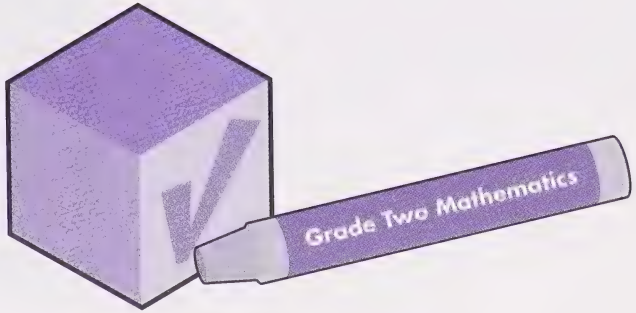
On the Edge

Lesson 3

You know from the work you did in earlier days that a face is the flat surface of a solid shape. You know the kinds of faces solid shapes have, but you don't yet know how many they have.

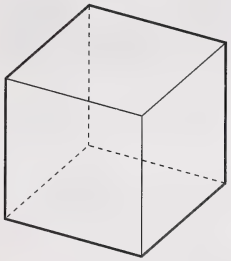


Use your geometric solids. Count the faces of each solid shape out loud, marking each face with a crayon as you do so. Your home instructor will tally the count.



On the Edge

1. Count the number of faces the cube has.



Tally Box

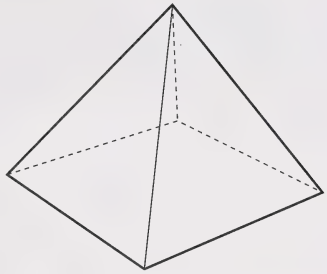
a. Count the tally marks. How many are there?

b. How many faces does a cube have?

c. How many edges does a cube have?

d. How many vertices does a cube have?

2. Count the number of faces the pyramid has.



Tally Box

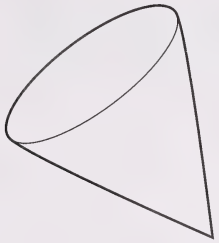
a. Count the tally marks. How many are there?

b. How many faces does a pyramid have?

c. How many edges does a pyramid have?

d. How many vertices does a pyramid have?

3. Count the number of faces the cone has.



Tally Box

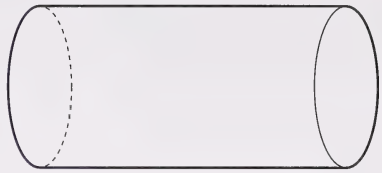
a. Count the tally marks. How many are there?

b. How many faces does a cone have?

c. How many edges does a cone have?

d. How many vertices does a cone have?

4. Count the number of faces the cylinder has.



Tally Box

a. Count the tally marks. How many are there?

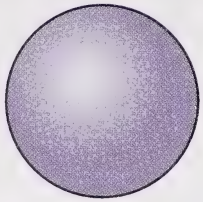
b. How many faces does a cylinder have?

c. How many edges does a cylinder have?

d. How many vertices does a cylinder have?

5. a. Does the sphere have faces?

Circle Yes or No.



b. Why or why not? _____

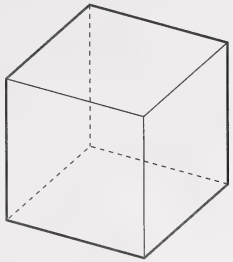
_____

c. What is a face? _____

_____

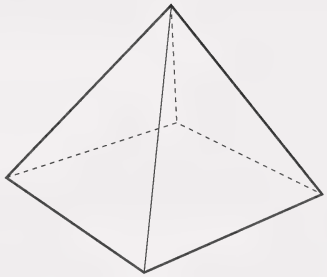
6. How many faces do these solids have?

a. cube

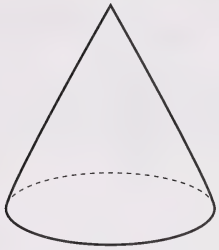


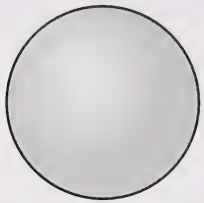
_____

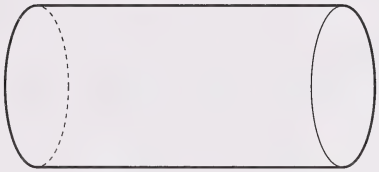
b. pyramid



_____

c. cone 

e. sphere 

d. cylinder 

7. Compare the number of faces to the number of edges and vertices. Fill in the chart with the information you collected. Look back to Lesson 2 for the number of edges.

Shape	Faces	Edges	Vertices
cube			
pyramid			
cone			
cylinder			
sphere			

On the Edge

8. Use the solid shapes to help you answer the following questions.

a. Which solid has the most faces?

_____

b. Which solid has the fewest faces?

_____

c. Which solids have square faces?

_____

_____

d. Which solids have more edges than vertices?

_____

_____

e. Which solid has no faces?

_____

f. Which solid has the fewest vertices?

_____

g. Which solid has the most vertices?

_____

h. Which solids have no vertices?

_____

_____

i. Which solid has the fewest edges?

_____

j. Which solid has the most edges?

_____

On the Edge

k. Which solid has no edge?

_____

l. Which solids have the same number of vertices as faces?

_____

_____

m. Which solid has triangular faces?

_____

Go to Assignment Booklet 4B.

Day 13: Rolling Along

Now that you know about the features of 3-D solids, you can begin to think about what you can do with them.

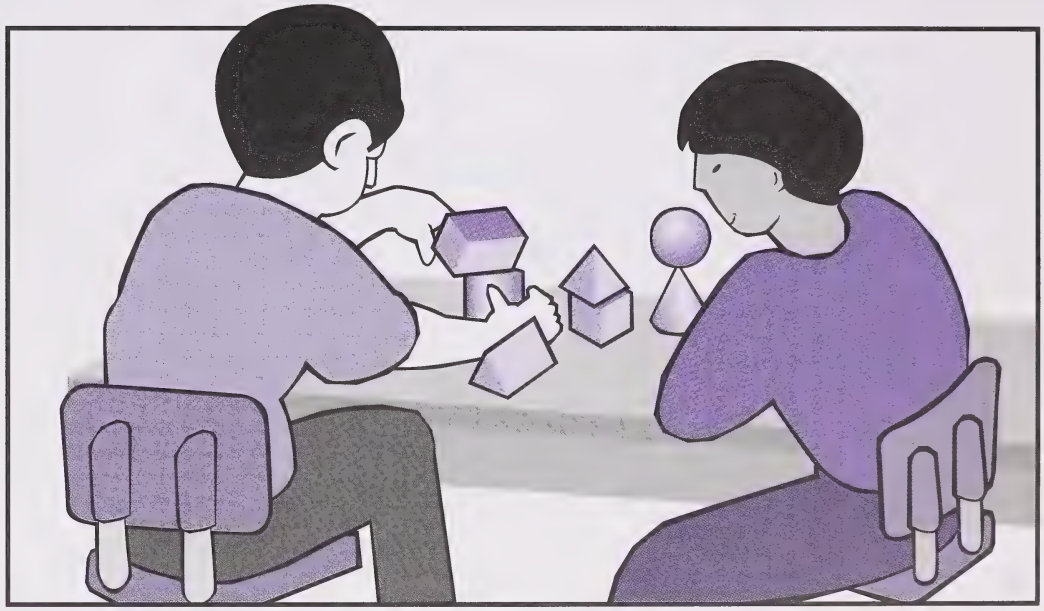
Like Elena and Jasper, you can check to see which solids roll or slide. Have you ever rolled down a hill? Have you ever tried to slide on the ice? You are a funny geometric solid!

There is one 3-D solid that has trouble sitting still. Which one do you think it is? How about you? Do you sometimes find it hard to sit still, too?

You will have to sit still to do your work today. Good luck!

Lesson 1

Elena and Jasper were trying to see what they could do with their 3-D shapes. They found that some could roll, some could slide, and others sat flat so they could stack them.

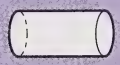


See which solids roll first.

1. In the chart on the next page, place a check mark (✓) under the appropriate heading.

Have the student roll each solid on a flat surface. The sphere, cone, and cylinder will roll.

Rolling Along

Object	Rolls	Does Not Roll
		

2. Which solids roll? _____ _____

_____

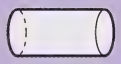
3. Why do these solids roll? _____

_____

Have the student slide each solid down an inclined surface. Place a board against an object that will make it slant. The solids that slide will be all the ones with flat faces. All the solids except the sphere will slide.

Lesson 2

1. Now see which solids slide. In the chart, place a check mark (✓) under the correct heading.

Object	Slides	Does Not Slide
		

Rolling Along

2. Which solids slide?

_____

_____

_____

_____

3. Why do they slide? _____

_____

4. Which solid does not slide?

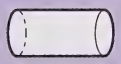
_____

5. Why not? _____

_____

Lesson 3

1. Now see which solids roll and slide. In the chart, place a check mark (✓) under the correct heading.

Object	Rolls Only	Slides Only	Rolls and Slides
			

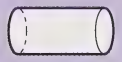
2. Which solids roll and slide? _____ _____

3. Why do they both roll and slide? _____

_____

Lesson 4

1. Now see which solids stack. In the chart, place a check mark (✓) under the correct heading.

Object	Stacks	Does Not Stack
		

2. Which solids stack? _____ _____

_____ _____ _____

3. Why do they stack? _____

_____

4. Answer the riddles.

a. It is hard for me to sit still.
When you set me down, I want to roll around.
I don't have any flat faces, edges, or vertices.

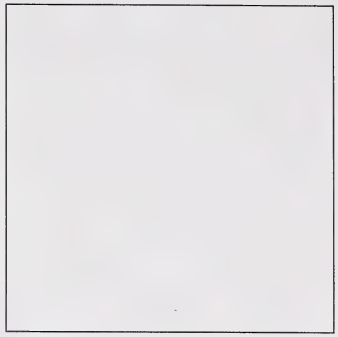
What am I? _____ Draw me.

b. I have one flat face that is a circle.
I can roll around.
I can slide.

What am I? _____ Draw me.

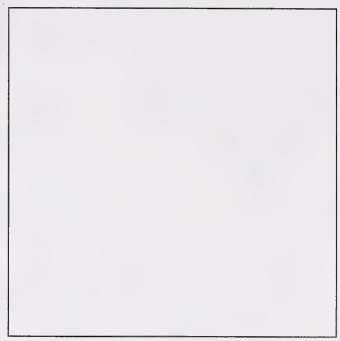
c. I roll.
I have two faces.
I have no vertices.

What am I? _____ Draw me.



d. I have six faces that are all the same shape.
I can slide, but I can't roll.

What am I? _____ Draw me.



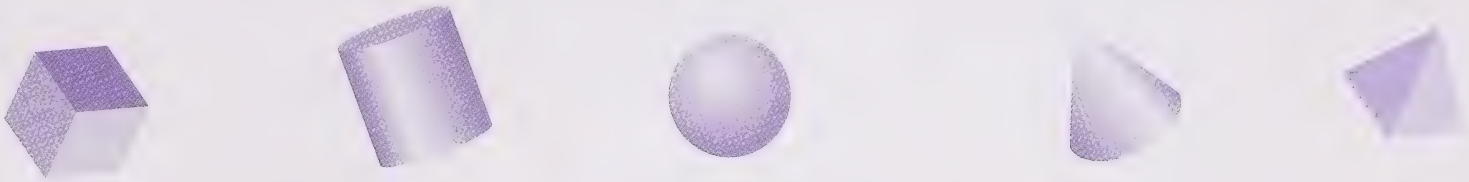
Now make up three riddles of your own. See if your home instructor can figure them out.

Rolling Along

5. a. Put a purple circle around the 3-D solids that can roll.

   b. Put a green X on the solids that can stack.

   c. Put a red square around the solids that can slide.



   d. Which solids were only marked once?

   _____

   e. Which solids were marked twice?

   _____ _____

   _____ _____

   f. Which solids were marked all three times?

   _____ _____

Day 14: All Sorts of Shapes

Have you ever had to sort your socks when they came from the wash? How did you know which sock to put with which?

You had to look at the size and colour, and maybe even the shape, of each sock.

Today you will sort solid shapes into many different groups. That means you will have to look at how they are the same and how they are different.

Then you will have to make a rule for each set of solid shapes you make. Put your thinking cap on and start sorting.

Lesson 1

Look at the solid shapes your home instructor sorted.

1. What is the sorting rule? _____

_____

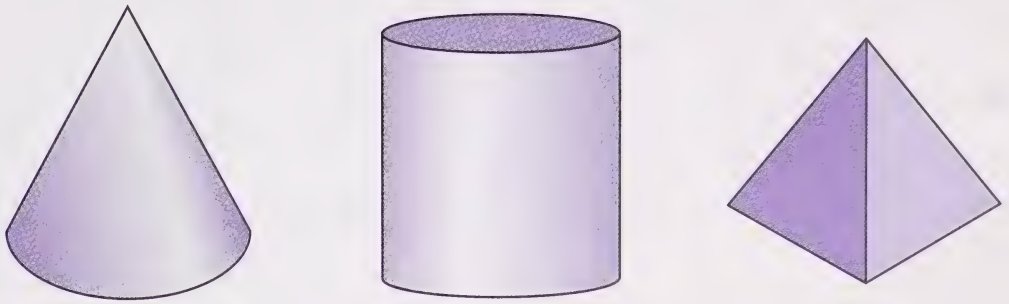
Look at the second group of solids your home instructor sorted.

2. What is the sorting rule? _____

_____

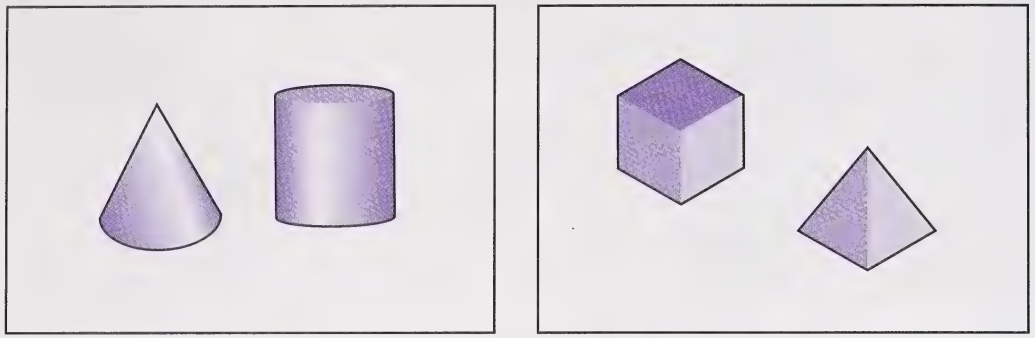
If the student is having difficulty thinking of ways of sorting, talk it over and think of some rules together. Let the student come up with at least two sorting rules.

Now you try it. Think of a sorting rule you can use and place the solids on the two mats. Have your home instructor guess what sorting rule you chose.



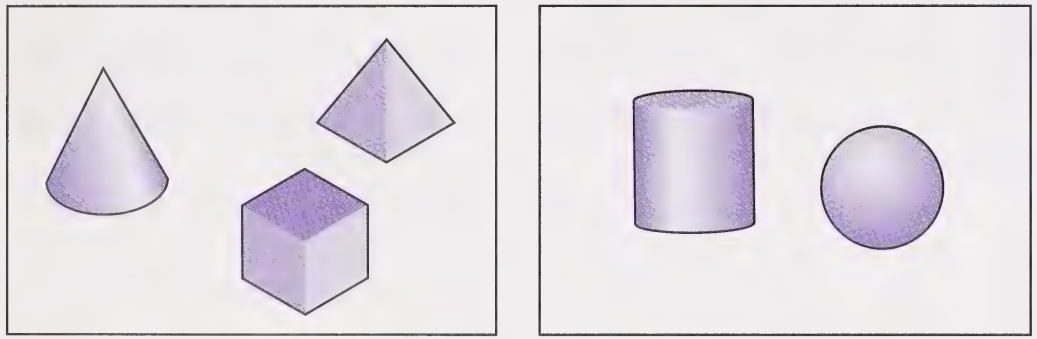
3. Look at these groups of sorted 3-D solids. Write the sorting rule.

a.



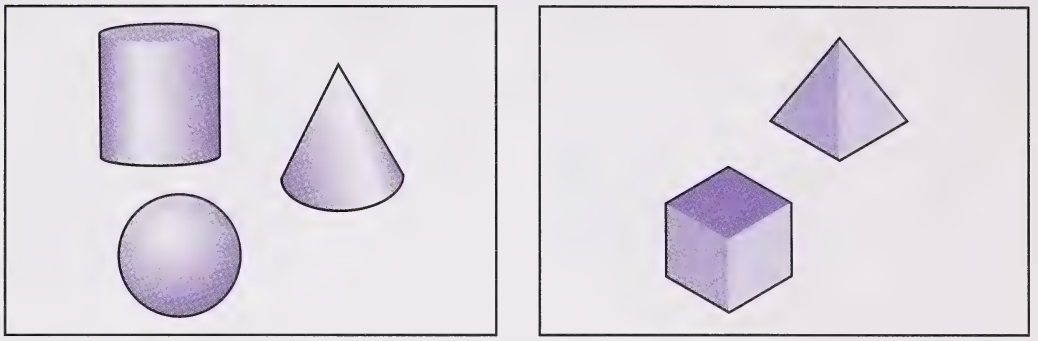
The sorting rule is _____

b.



The sorting rule is _____

c.



The sorting rule is _____

_____

Lesson 2

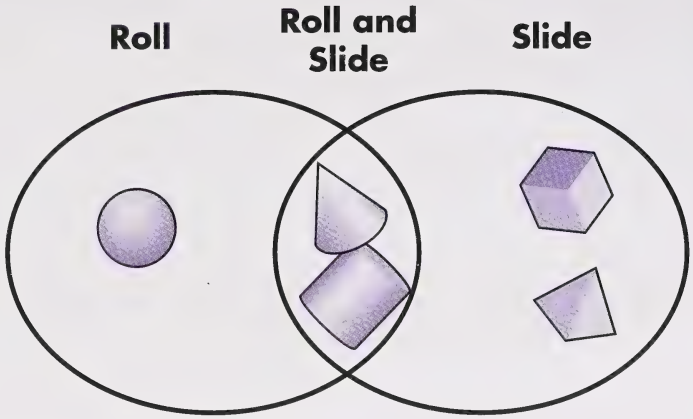
Discuss how to sort three sets. See if the student remembers this from Module 1.

How would you sort solids that can roll, slide, **and** roll and slide?

Sometimes you have objects that sort into two sets, like solids that roll and solids that don't roll. You can put those into two circles. But what if you have a third set, where some of the solids that roll also slide?

Did you come up with a solution? Remember sorting sets in Module 1? This is what you did to solve the problem.

All Sorts of Shapes



The solids that only roll are in the roll circle, the objects that only slide are in the slide circle, and the objects that both roll and slide are in the roll and slide overlap.

What is the sorting rule for these sets of solid shapes?

_____

_____

For more practice counting edges, faces, and vertices, go to the Extension Activities.

Day 15: Build It Yourself

Just like Jasper and Elena, you know so much about 3-D solids you can now make some models. The models you build will be skeletons of the 3-D shapes.

Close your eyes. Can you imagine a skeleton of a cube? It's not easy!

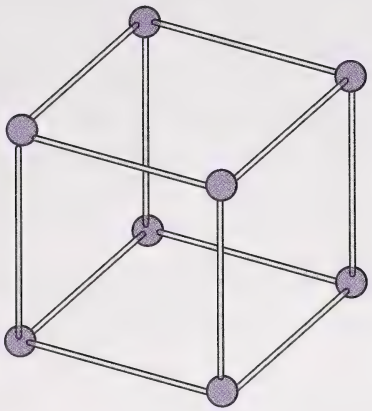
You may also be wondering what you will use to build these skeletons. Who knows, you might even be able to eat part of the skeleton models you build.

Are you interested? That's great! Then you are ready to begin.

Lesson 1

Jasper and Elena were really excited. Their home instructor told them they could actually make models, or skeletons, of the 3-D solids they were studying.

Look at this drawing of a skeleton, or model, of a cube.



Can you think why it's called a skeleton? Do you know what a skeleton is?

Elena chose to make the pyramid first. That's her favourite 3-D solid. Jasper's favourite is the cube.

Do you have a favourite solid shape? What is it?

_____

Discuss what a skeleton is and why the model is called a skeleton—it's really the "bare bones" of the solid. Help the student realize that the skeleton is different from the solid in that it has no faces—just the edges and vertices.

Lesson 2

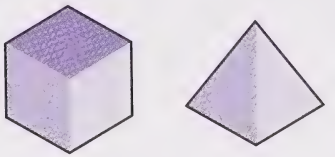
In order to make a skeleton of the pyramid, the first thing Elena did was look closely at the solid shape of the pyramid.

She counted the number of edges.She knew that she would need eight sticks for the edges.

She then counted the vertices. Elena knew she would need five marshmallows to make the vertices on her model.

Now Elena was ready to begin!

Select either the pyramid or the cube to make a model. (You will make models of the cone, cylinder, and sphere on Day 16.)



Which 3-D solid have you chosen to build?

_____

Build It Yourself

How many sticks and balls of clay (or marshmallows) will you need? Remember, you need as many sticks as there are edges on the solid shape you chose. Then you will need as many balls of clay as there are vertices on your solid.

How many edges does your shape have? ☐

How many vertices does your shape have? ☐

Count out the sticks and balls of clay you will need and start building!

Record the number of sticks for edges and balls of clay or marshmallows for vertices you used to make your skeleton. Then in the charts on the following page, write the number of edges and vertices that your 3-D solid shape has.

Have the student record the number of straws for edges and marshmallows for vertices. Then have the student transfer this information relating the number of straws used to the number of edges and the number of marshmallows used to the number of vertices.

Solid	Number of Sticks Used	Number of Balls of Clay Used

Solid	Edges	Vertices

Now make a skeletal model of the other straight-edged solid.

Solid	Number of Sticks Used	Number of Balls of Clay Used

Solid	Edges	Vertices

How are the solids and skeletal models alike?

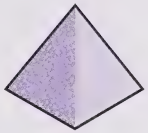
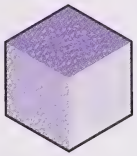
The student should answer that they are alike because they have the same number of edges and vertices.

How are the solids and skeletal models different?

They are different because the models do not have faces.

Lesson 3

In the following exercise, draw your skeleton, and write in the following chart how much of each material you used to build it.

Solid	My Skeleton	Materials I Used to Build It
		☐ sticks ☐ balls
		☐ sticks ☐ balls

Go to Assignment Booklet 4B.

Day 16: Build These, Too

The models you made yesterday were marvelous. You are ready to make more today.

The models you make today will really get you thinking. How could you make round 3-D shapes?

Be creative and have fun.

Build These, Too

Lesson 1

Jasper and Elena had fun building skeletons of the straight-edged, 3-D solid shapes. Now they wanted to try building the other three solids they had learned about.

What other three solids do they mean?

_____

_____

_____

In the following lesson, encourage the student to realize that it is difficult to make a circular face out of sticks because they do not bend.

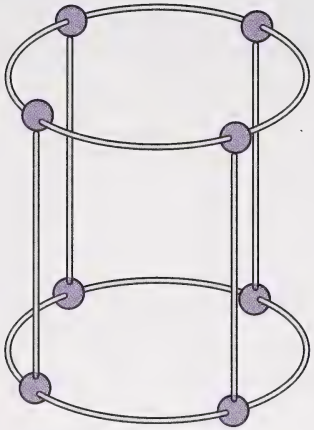
Elena thought she would start with the cylinder. She took her sticks and tried making the circular faces of the cylinder. It didn't work! Why not?

She would have to think of something else to use that can be easily bent. Do you have any ideas?

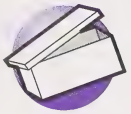
Pipe cleaners would bend.

Build These, Too

Elena made two circular faces from the pipe cleaners. She then joined them with more pipe cleaners. This is how her skeletal model of a cylinder ended up looking.



Lesson 2



Take your pipe cleaners out of your Math Box.

You will now make skeletons of the cone, cylinder, and sphere. As you make your skeleton, talk about what you are doing with your home instructor.

Discuss each solid while the student begins to build it. Talk about how the solids can be built using the pipe cleaners.

Lesson 3

Draw your skeleton. Then write what material you used and how you made it.

Solid	My Skeleton	How I Built My Skeleton

Build These, Too

Solid	My Skeleton	How I Built My Skeleton

1. How are the solids and skeletal models alike?

_____

_____

2. How are the solids and skeletal models different?

_____

_____

Lesson 4

You have now made all five 3-D shapes.

1. Which solids are more difficult to make skeletons of? _____

_____

2. Were you able to use sticks and marshmallows, or balls of clay, to make the cone, cylinder, and sphere?

Circle

or

.

3. Why or why not? _____

_____

4. How did you make them? _____

_____

Go to Assignment Booklet 4B.

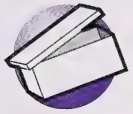
Day 17: Making Faces

Just like Jasper, are you now wanting to make solid shapes? You will have to use different materials than you used yesterday to make solid 3-D shapes.

As you make each shape, you will be back to making faces. When is the last time you made faces in a mirror? Did you make some really funny faces?

Let's see what kind of faces you can make on your 3-D solids today.

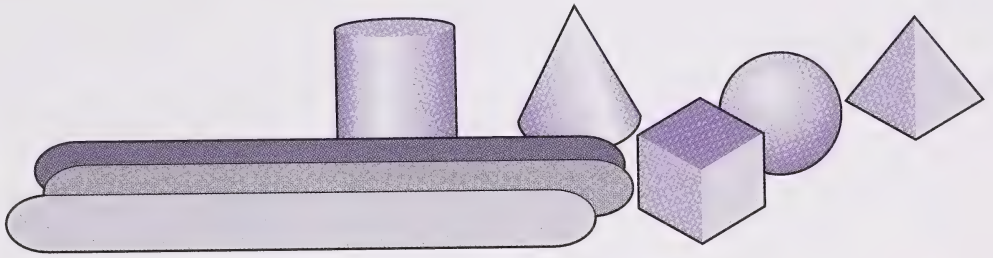
Lesson 1



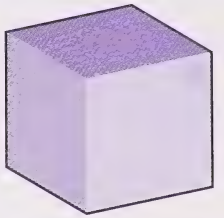
Take your modelling clay, or playdough, out of your Math Box. You will also need your ruler.

After Jasper and Elena built skeletons of the solid shapes, Jasper wanted to build the solid shapes. He wanted them to have faces.

Elena suggested they make the models out of modelling clay. They eventually built all of the 3-D shapes. You can, too.



Jasper and Elena decided to start with the cube. It seemed the easiest solid to start with.

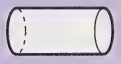


Take the cube out of your geometry set. Look at it closely. Make a model out of your modelling clay.

Your home instructor will show you how to use your ruler or plastic knife to make the edges and corners.

Lesson 2

After you finish your cube, examine its faces. Then complete the cube section of the chart to indicate what faces there are and how many. When you finish filling in the chart for the cube, continue building the models of the 3-D solids on the chart. Fill the chart in after you finish each model.

Shape	Faces	Faces	Faces
cube			
pyramid			
 cylinder			
cone			
sphere			

Day 18: What Do I Know Now?

Wow! You have learned many new things in this module. It is time to review it all.

You learned about all kinds of 2-D shapes and 3-D solids. Can you remember the names of all the shapes you explored?

What can you remember about their faces, vertices, and edges? Can you draw the shapes?

That is what you will be doing today.

What Do I Know Now?

This is a review of what you learned in this module. See how much you remember.

1. Draw a triangle.

a. How many sides does it have? ☐

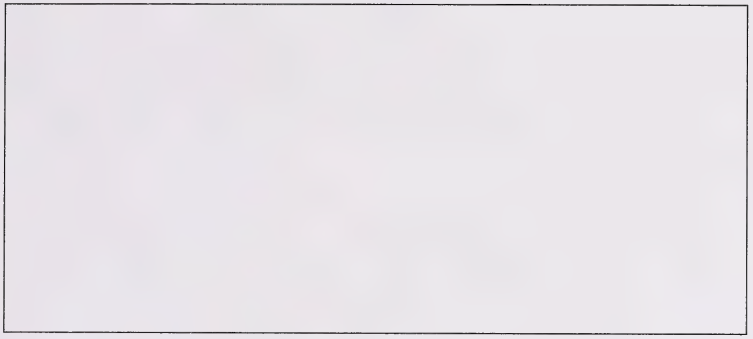
b. How many corners does it have? ☐

2. Draw a rectangle.

a. How many sides does it have? ☐

b. How many corners does it have? ☐

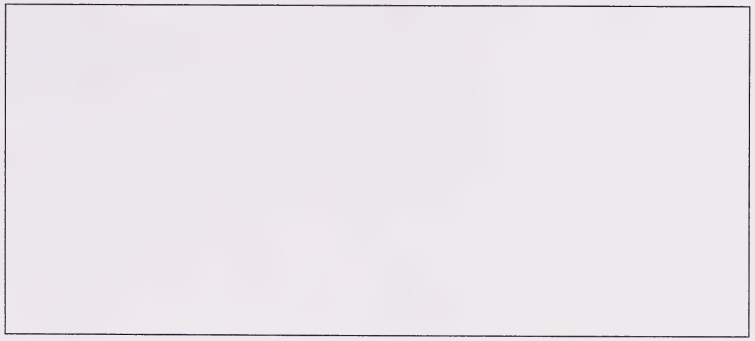
3. Draw a square.



a. How many sides does it have? ☐

b. How many corners does it have? ☐

4. Draw a circle.



a. How many sides does it have? ☐

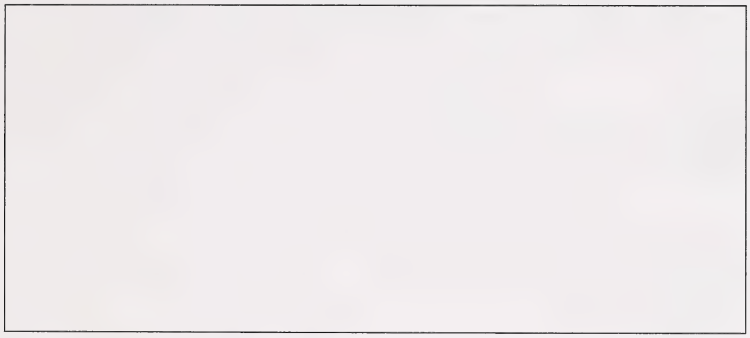
b. How many corners does it have? ☐

5. Draw a pentagon.

a. How many sides does it have? ☐

b. How many corners does it have? ☐

6. Draw a hexagon.

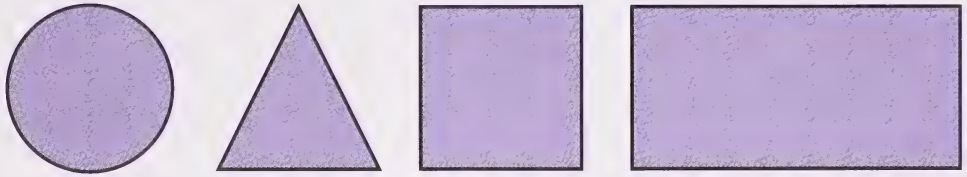


a. How many sides does it have? ☐

b. How many corners does it have? ☐

7. Rearrange this pattern.
   Draw the new pattern.

8. Draw a line in the shapes below to show where the fold is to make two congruent shapes.



9. Write the name of the solid each item looks like.

a. ball _____

b. can _____

c. dice _____

d. tower roof _____

e. ice cream cone _____

Draw the shape. Then print the number of faces, edges, and vertices each has.

10. cube

a. faces

b. edges

c. vertices

11. sphere

a. faces

b. edges

c. vertices

12. cone

a. faces ☐

b. edges ☐

c. vertices ☐

13. cylinder

a. faces ☐

b. edges ☐

c. vertices ☐

14. pyramid

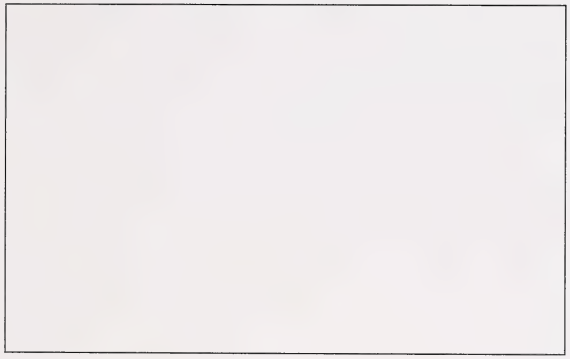
a. faces ☐

b. edges ☐

c. vertices ☐

Draw the skeletons of the 3-D solids. Then print how many sticks and marshmallows you need to make them.

15. pyramid



a. sticks ☐

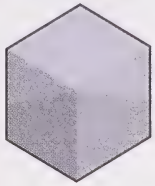
b. marshmallows ☐

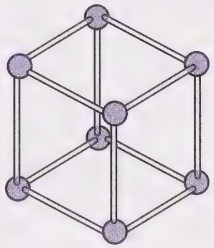
16. cube

a. sticks

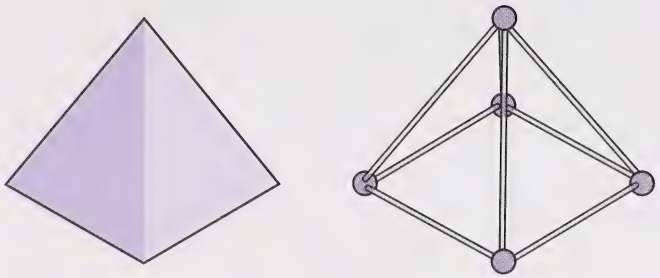
b. marshmallows

17. How are the solid object and the skeletal model the same?





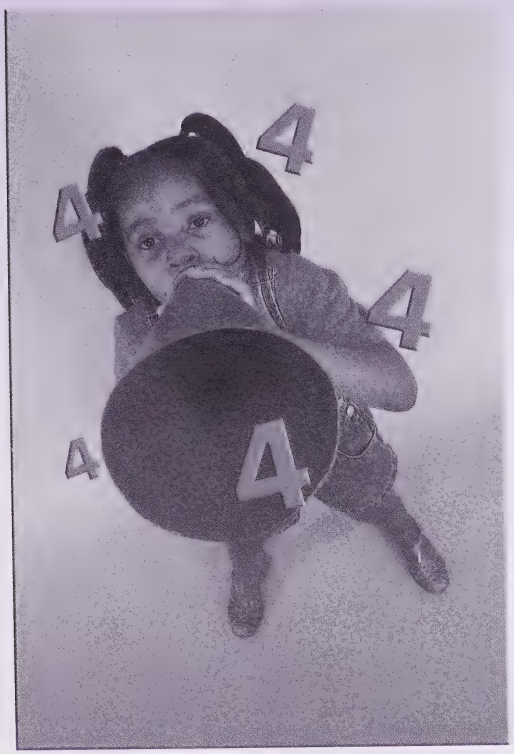
18. How are the solid object and the skeletal model different?



19. Why can't you use sticks and marshmallows to make a cylinder?

To learn more about building 3-D solids, go to the Extension Activities.

Module Summary



Congratulations

You have now completed Module 4: Super Shapes. You learned to describe 2-D shapes and 3-D solids in many ways.

You learned about the following shapes:

- square
- rectangle
- triangle
- circle
- pentagon
- hexagon
- octagon

You learned about the following solids:

- cube
- sphere
- pyramid
- cylinder
- cone

You also made different patterns using shapes. Now, when you look around, you will see shapes and solids and patterns everywhere.

Days 2 and 3

Activity 1

You will need your geoboard and rubber bands for this activity.

Make these squares on your geoboard.

- Make the biggest square you can.
- Make little squares in each corner of the big square.
- Make a medium-sized square in the middle of the large square.
- Make the smallest square you can.
- Take all the rubber bands off the board. Now make a design using only squares.

Make these triangles on your geoboard.

- Make the biggest triangle you can.
- Make a small triangle inside the large one.
- Make a medium-sized triangle inside the large one.
- Take all the bands off the board. Now make a house with squares and triangles. Add a door.
- Take all the bands off and make a design using triangles.

Extension Activities

Make these rectangles on your geoboard.

- Make big, medium, and small rectangles.
- Take the bands off. Now make a sailboat using a rectangle and triangles.
- Take the bands off and make a face using all the shapes.
- Take the bands off and make a design using rectangles.

Activity 2

You will need magazines that you can cut up for this activity.

Find pictures in magazines that have things in them shaped like a circle, rectangle, square, or triangle.

Display your pictures and write a story about them. Tell about the shapes you found.

Day 4

Activity 1

Draw a pentagon.	Draw a square.	Draw a rectangle.

Draw a circle.	Draw a hexagon.	Draw a triangle.

Draw a circle inside a square, inside a triangle.	Draw a pentagon inside a square, inside a rectangle.	Draw a triangle inside a circle, inside a hexagon.

Activity 2

Use the material your home instructor has given you to make a shape mobile. Make a circle, a square, a rectangle, a triangle, a pentagon, and a hexagon.

Tie the shapes to a coat hanger with string and hang the mobile up.

Activity 3

Take the Geometry Bingo Cards out of your Student Folder.

Play Geometry Bingo with your home instructor.

Activity 4

Look inside and outside your home. Find all the objects you can that look like the shapes you have learned about.

In this chart, draw the objects you found that look like these shapes.

				All Other Shapes

Activity 5

Make 10 to 20 little balls out of modelling clay or playdough.

Now make each of the 2-D shapes you know with toothpicks and the balls of modelling clay.

- rectangle
- square
- triangle
- pentagon
- hexagon
- octagon

1. Can you make more than one kind of triangle? Circle

or

.

2. How many sides does a pentagon have? ☐

3. How many corners does a rectangle have? ☐

4. What can you write about the sides of a square?

_____

5. Can you make a big and a small square? Circle or .

6. Can you make a circle? Circle or .

Why or why not?

---

7. How many toothpicks did you use to make the rectangle? ☐

Day 6

You will need the tangram puzzle pieces you cut out in Day 6 and the Tangram Tangles from your Student Folder.

Make the figures on the pages using your tangram puzzle pieces. Then see how many you can make up on your own!

Extension Activities

Days 8–11

Activity 1

You will need the Solids Bingo Cards from your Student Folder.

Play Solids Bingo with your home instructor. Your home instructor will pull out a solid shape from a bag. Say the name of the solid out loud. Then mark your card with a bingo chip or other manipulative.

Activity 2

Put all the 3-D solids into a box or bag. Reach in and feel one without looking at it. Describe it to your home instructor. Your home instructor will guess what the shape is.

Then have your home instructor reach in and feel a shape and describe it to you. Now you will guess what the shape is.

Take turns doing this until all the shapes have been described.

Activity 3

Put all the 3-D solids in a bag. Your home instructor will name a 3-D solid. Without looking, you must find the solid in the bag.

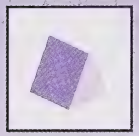
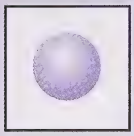
Day 12–14

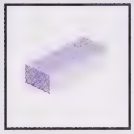
Activity 1

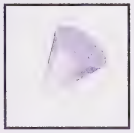
Count the number of edges of each shape pictured. Graph the number of edges by colouring one box for each edge counted.

Activity 2

Count the number of vertices of each shape pictured. Graph the number of vertices by colouring one box for each vertex counted.





Activity 3

Count the number of faces of each shape pictured. Graph the number of faces by colouring one box for each face counted.

Extension Activities

Activity 4

Use your geometric set and as many everyday 3-D objects as you can find. See what kind of structures you can make by stacking them.

Days 15–18

Activity 1

Nets

You will need the Nets in your Student Folder.

Nets are patterns of a solid. When the edges are attached, the solid will be created. Cut out the shapes and glue the sides that are marked with small lines together to build your own solid.

Activity 2

Build the following skeletal models using the listed material.

- a model using eight marshmallows and twelve sticks
- a model using five marshmallows and eight sticks
- a model using pipe cleaners having only one face
- a model using pipe cleaners having no edges or vertices

Appendix

Image Credits
Large 2-D Shapes
Word Cards
Geometry Bingo Cards
2-D Shapes
2-D Shapes for Patterns
Five-Piece Puzzle
Tangram Puzzles
Tangram Tangles
Tangram Tangles Answer Key
Spin Game
Solids Bingo Cards
Nets

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Welcome page: EyeWire, Inc.

Page

1 top right: PhotoDisc, Inc.; left: EyeWire, Inc.
bottom right: PhotoDisc, Inc.
2 PhotoDisc, Inc.
3 EyeWire, Inc.
20 Rubberball Productions
31 EyeWire, Inc.
46 EyeWire, Inc.
55 EyeWire, Inc.
56 PhotoDisc, Inc.
64 PhotoDisc, Inc.
73 EyeWire, Inc.
74 PhotoDisc, Inc.
76 top: Image Club/Studio Gear/EyeWire, Inc.
bottom: Corel Corporation
79 PhotoDisc, Inc.
80 Corel Corporation
81 top: PhotoDisc, Inc.
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121 EyeWire, Inc.
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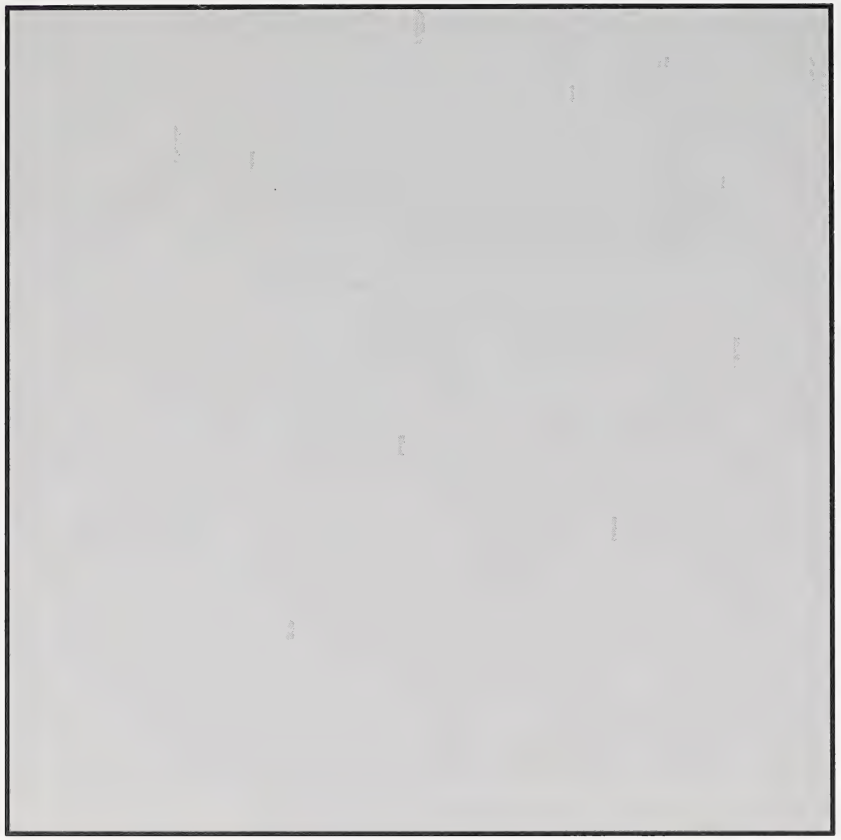
162 top right: PhotoDisc, Inc.
left: PhotoDisc, Inc.

Appendix title page: EyeWire, Inc.

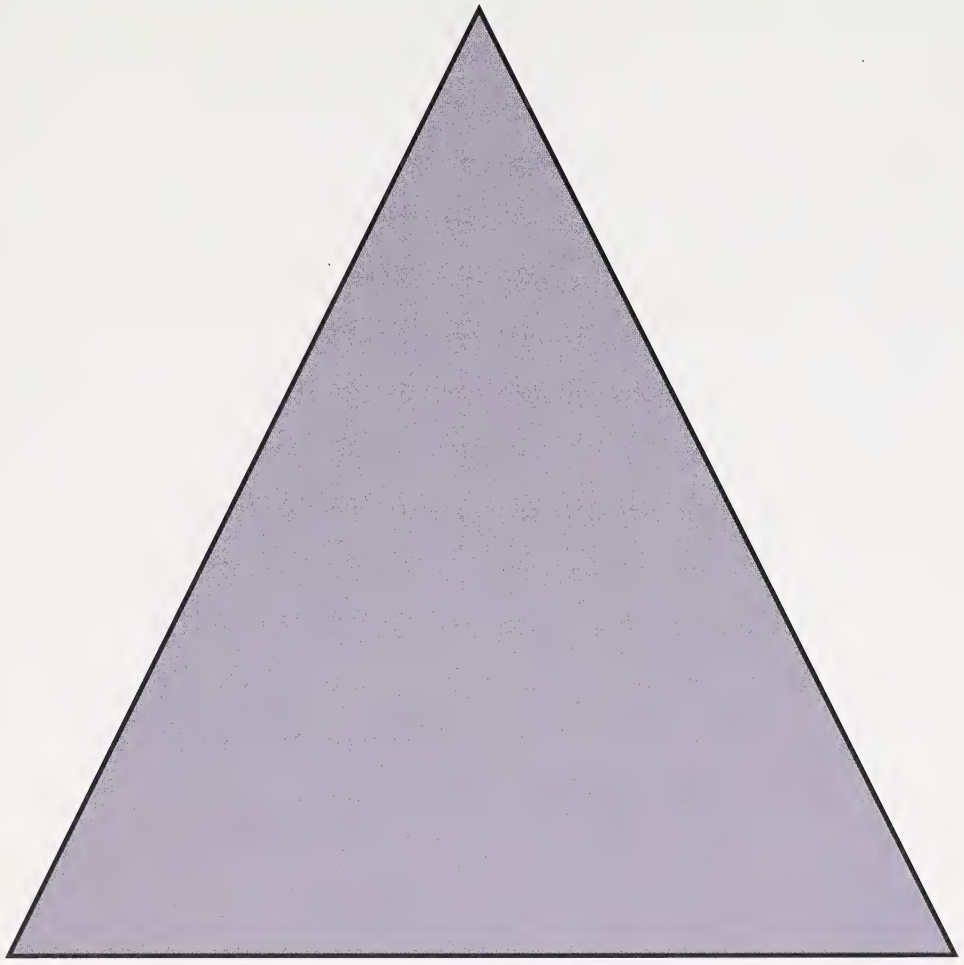
Large 2-D Shapes

Square

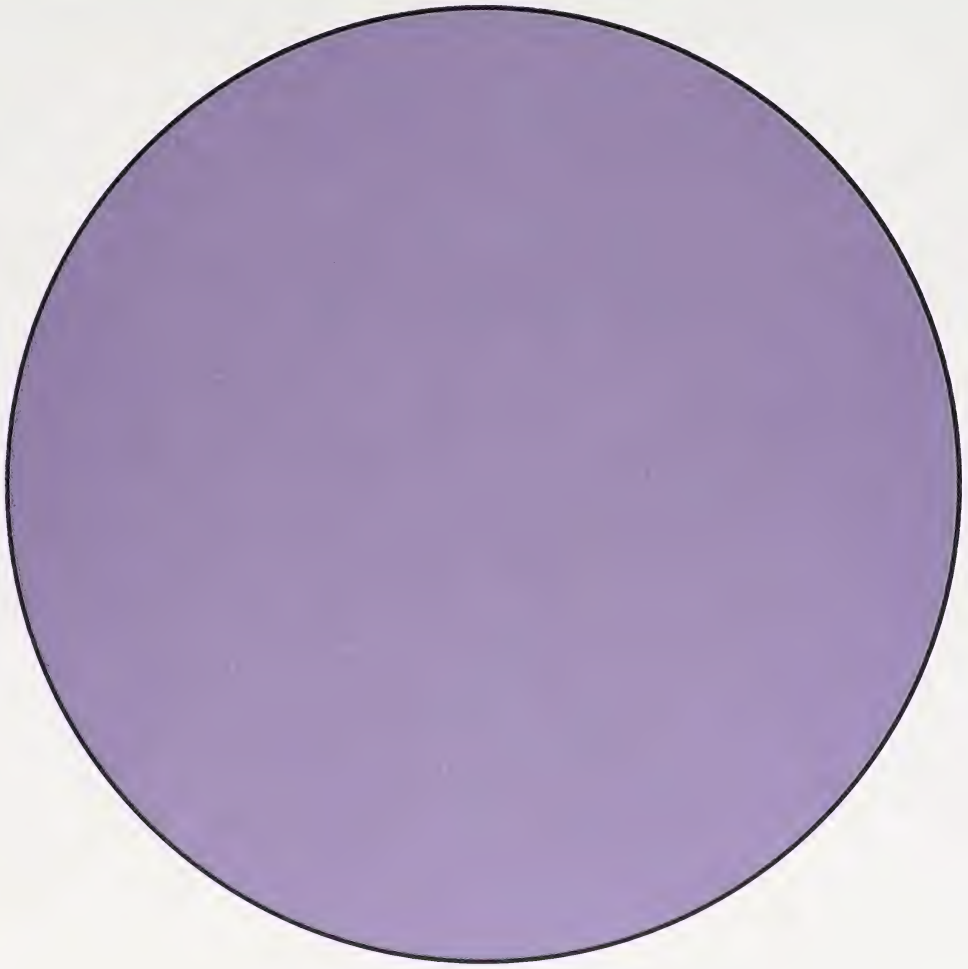


Rectangle

Triangle



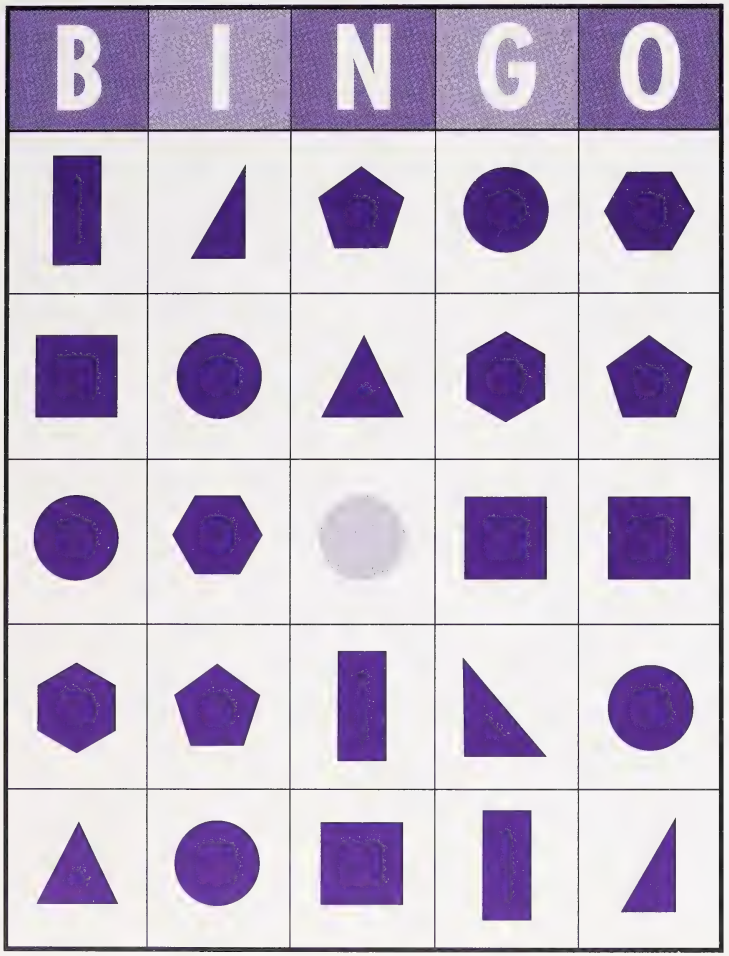
Circle

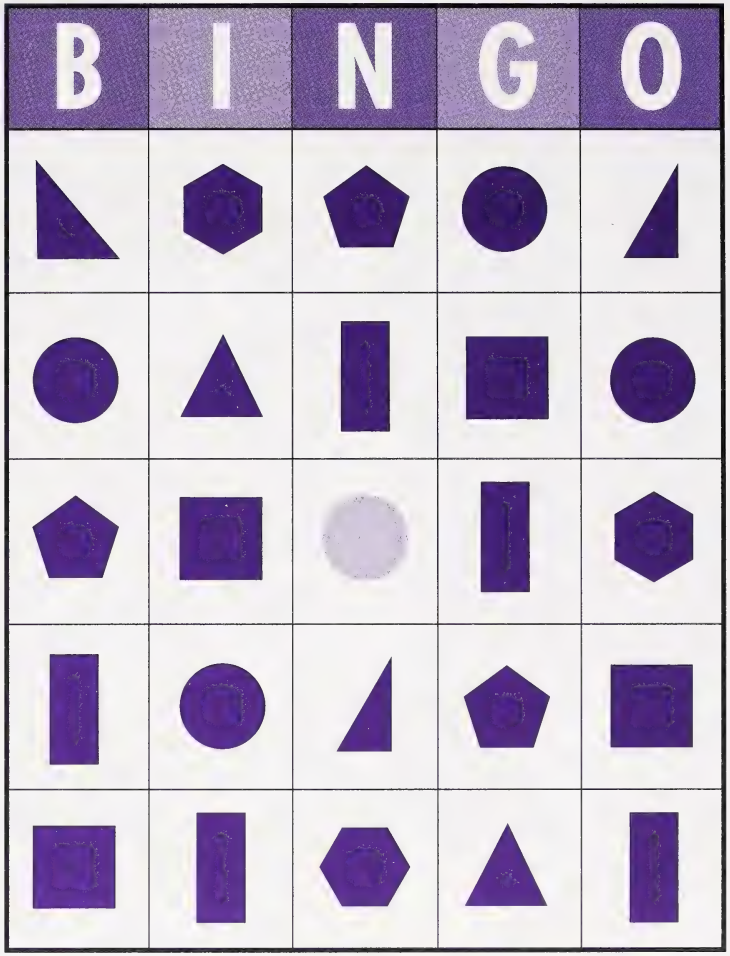


Word Cards

square	rectangle	circle
square	rectangle	circle
pentagon	hexagon	triangle
pentagon	hexagon	triangle

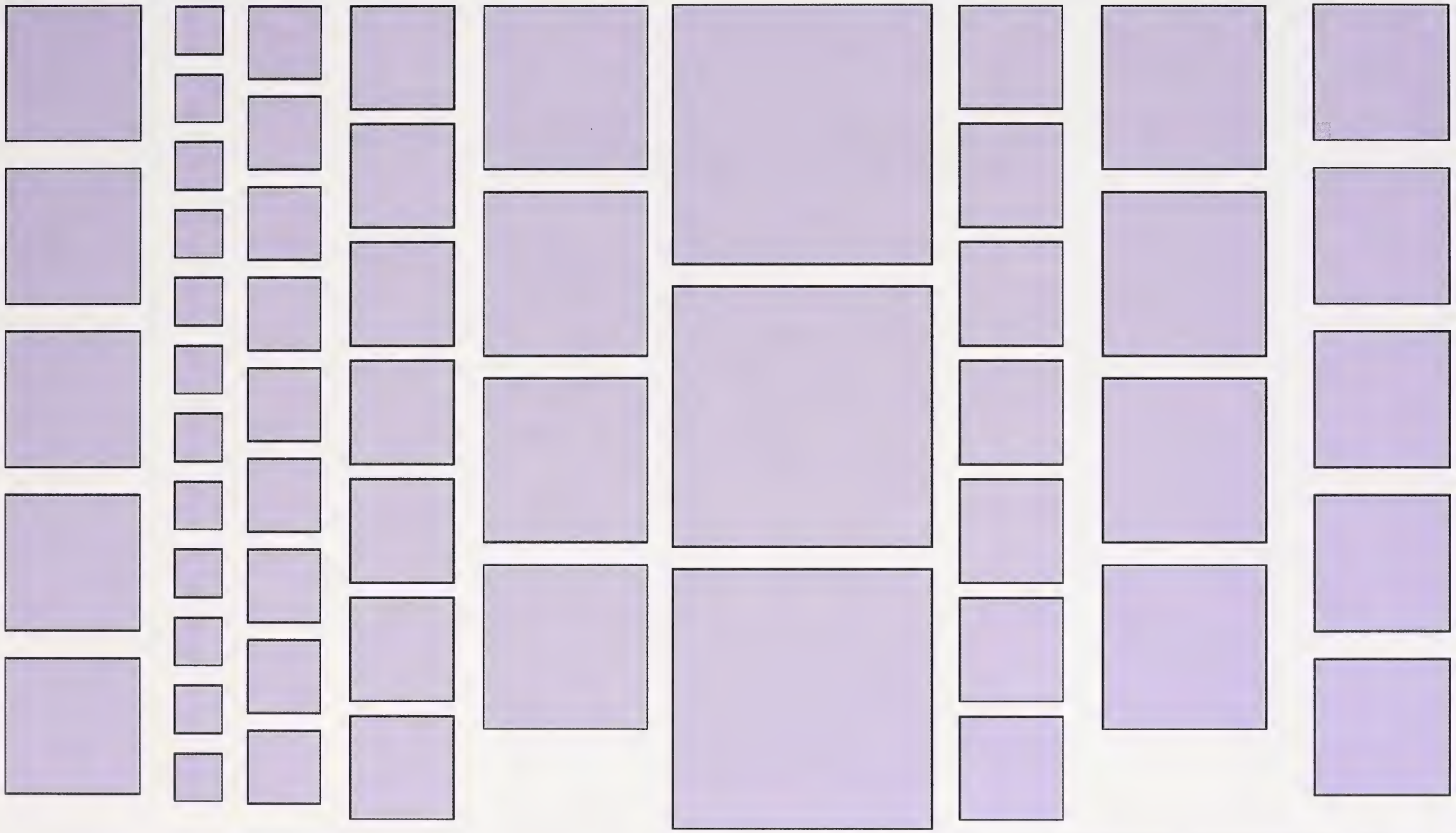
Geometry Bingo Cards



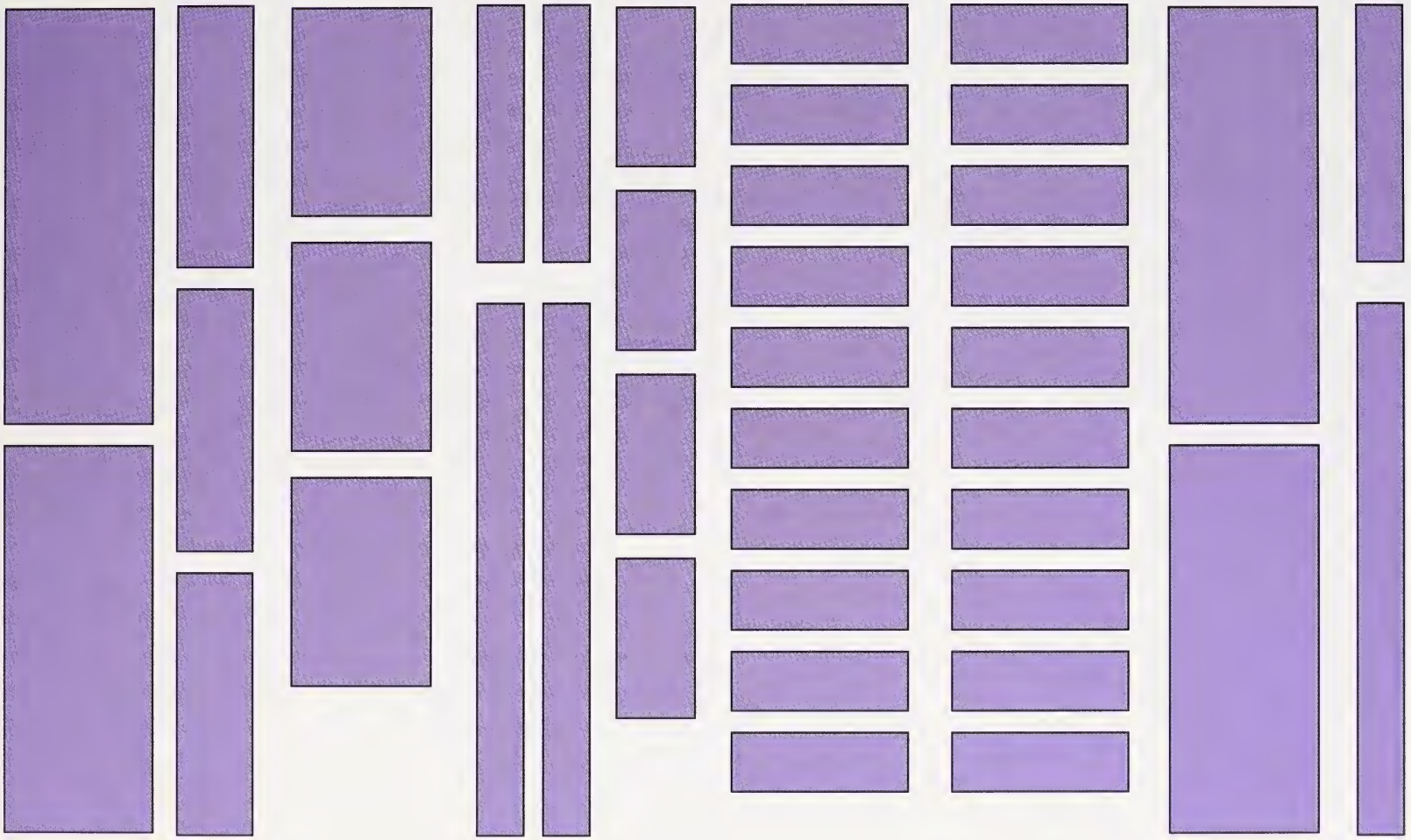


2-D Shapes

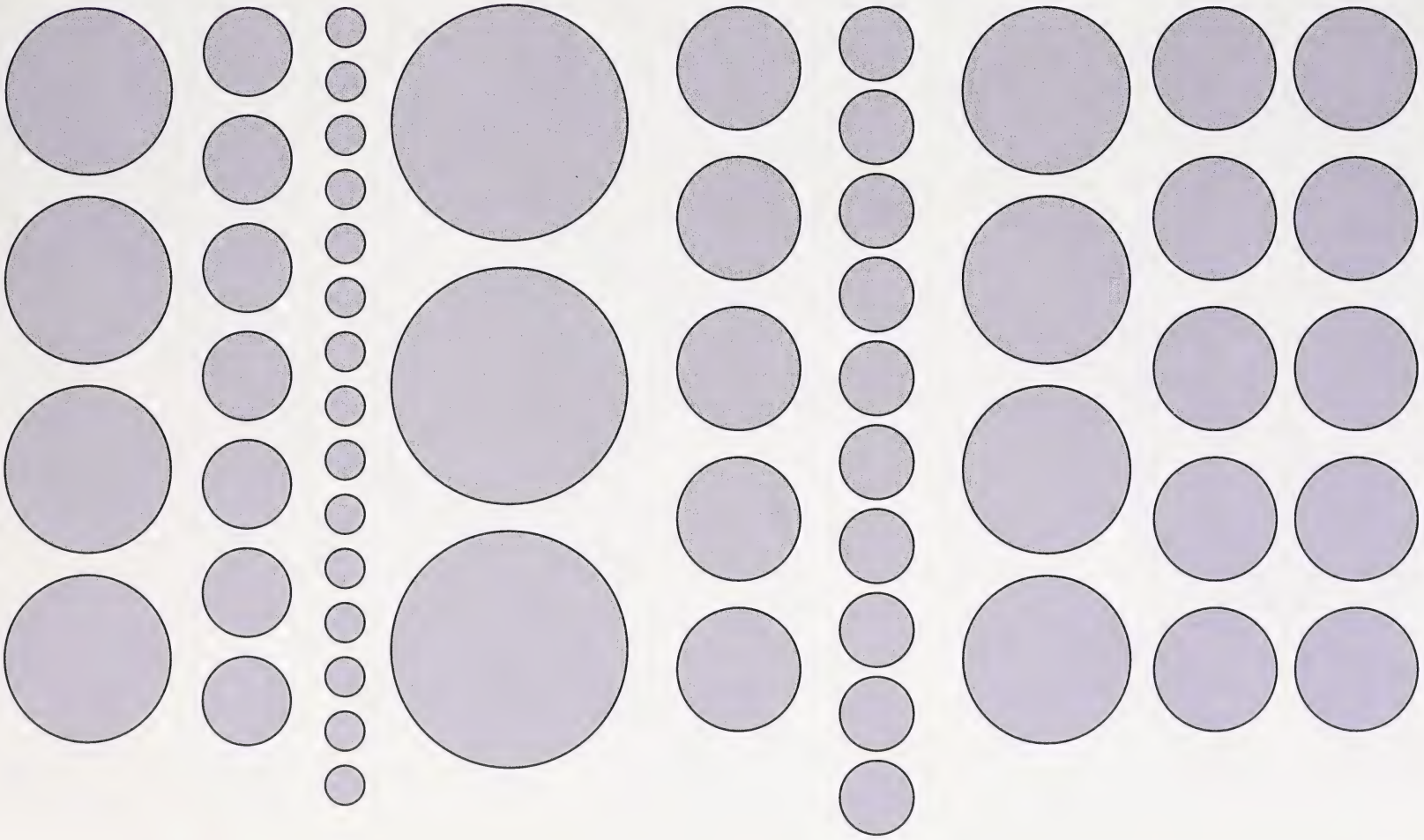
Squares



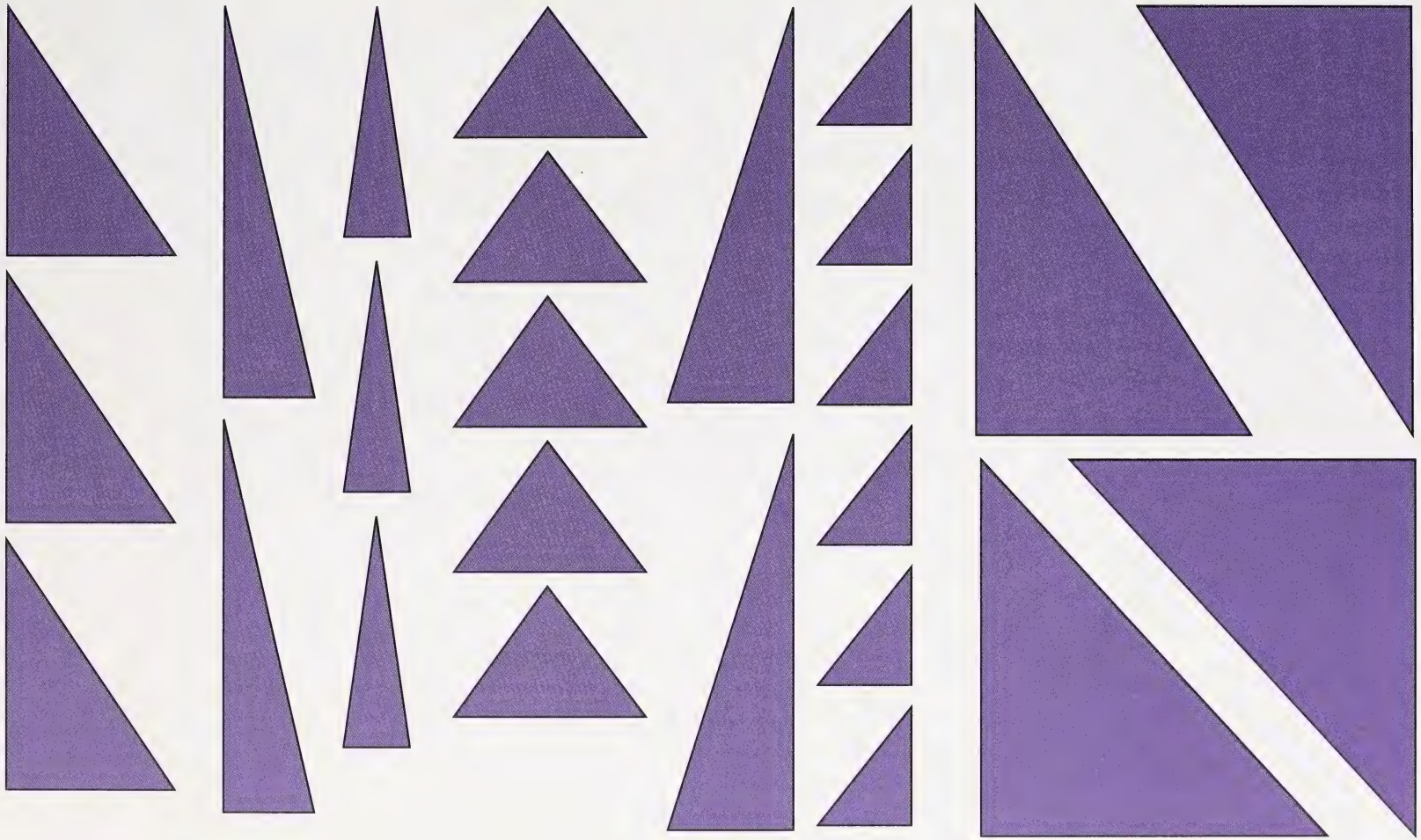
Rectangles



Circles

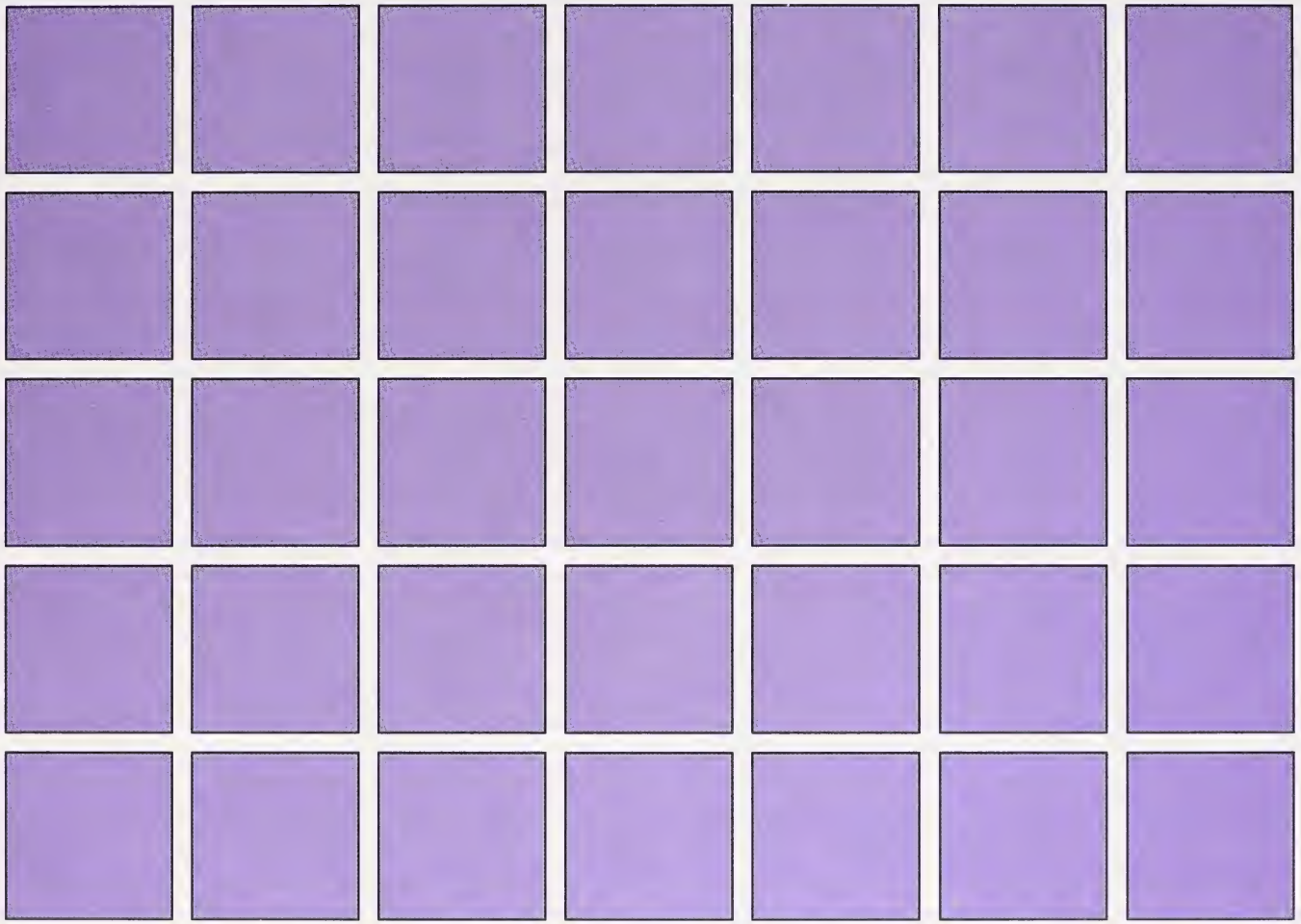


Triangles

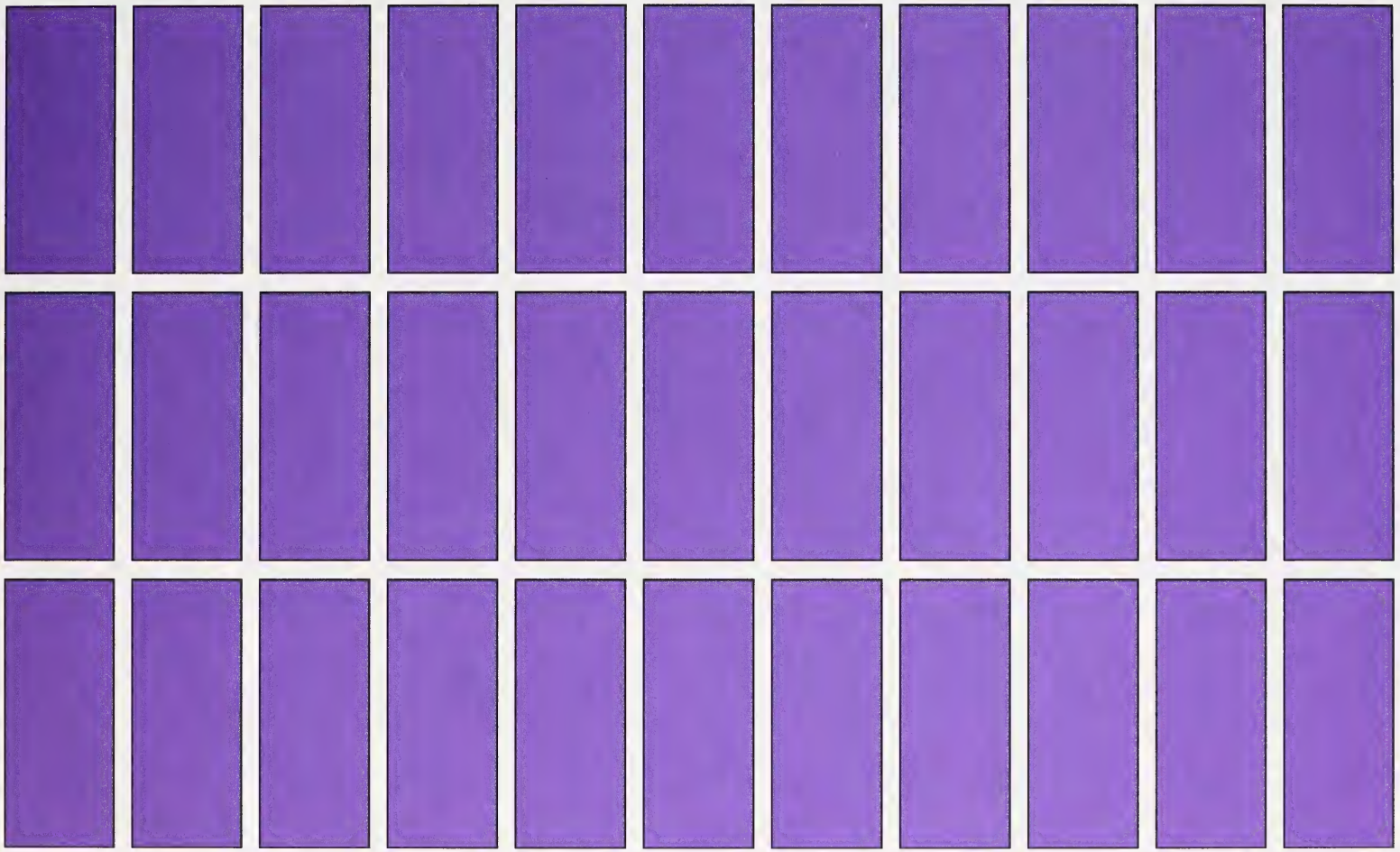


2-D Shapes for Patterns

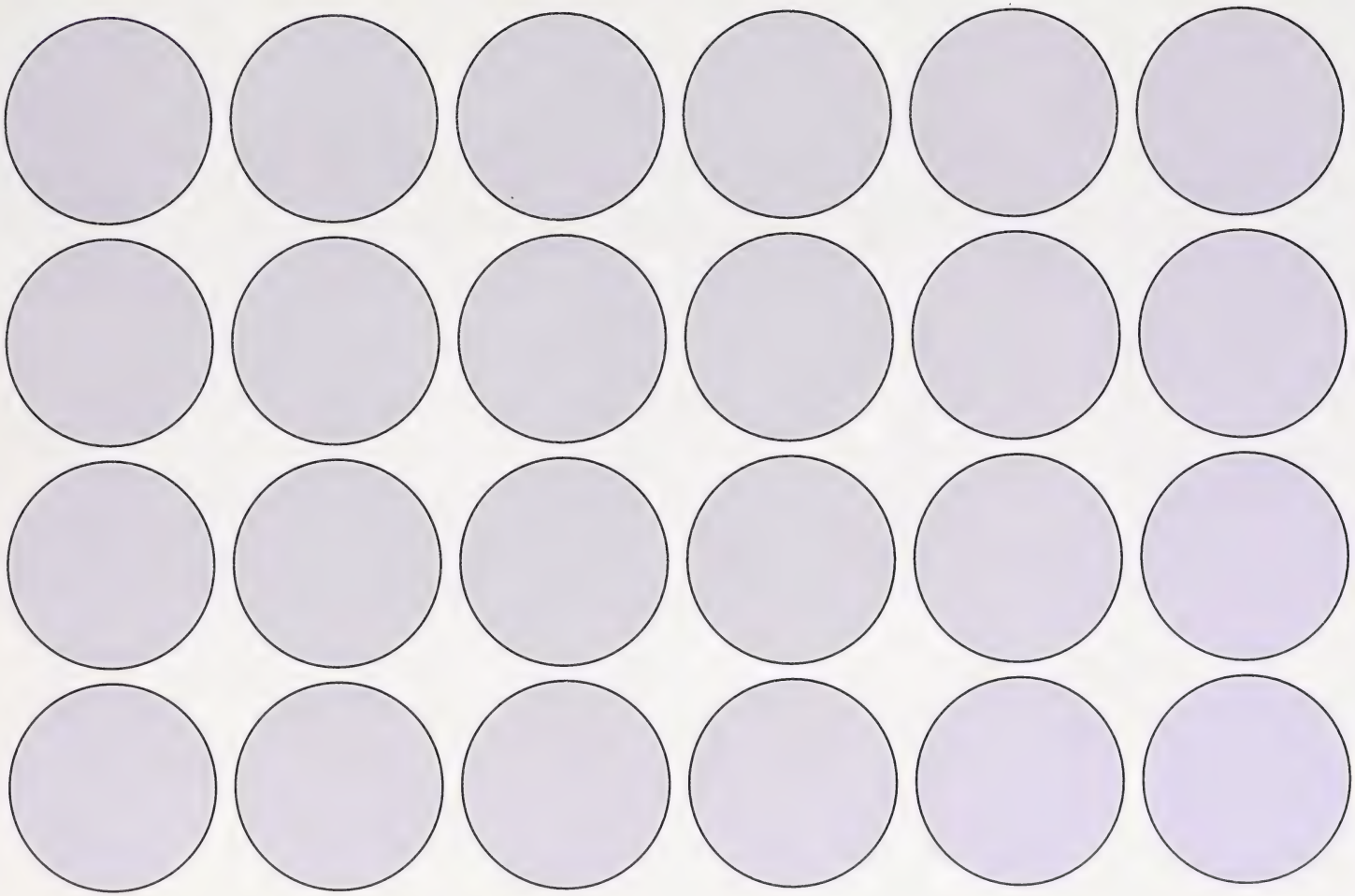
Squares



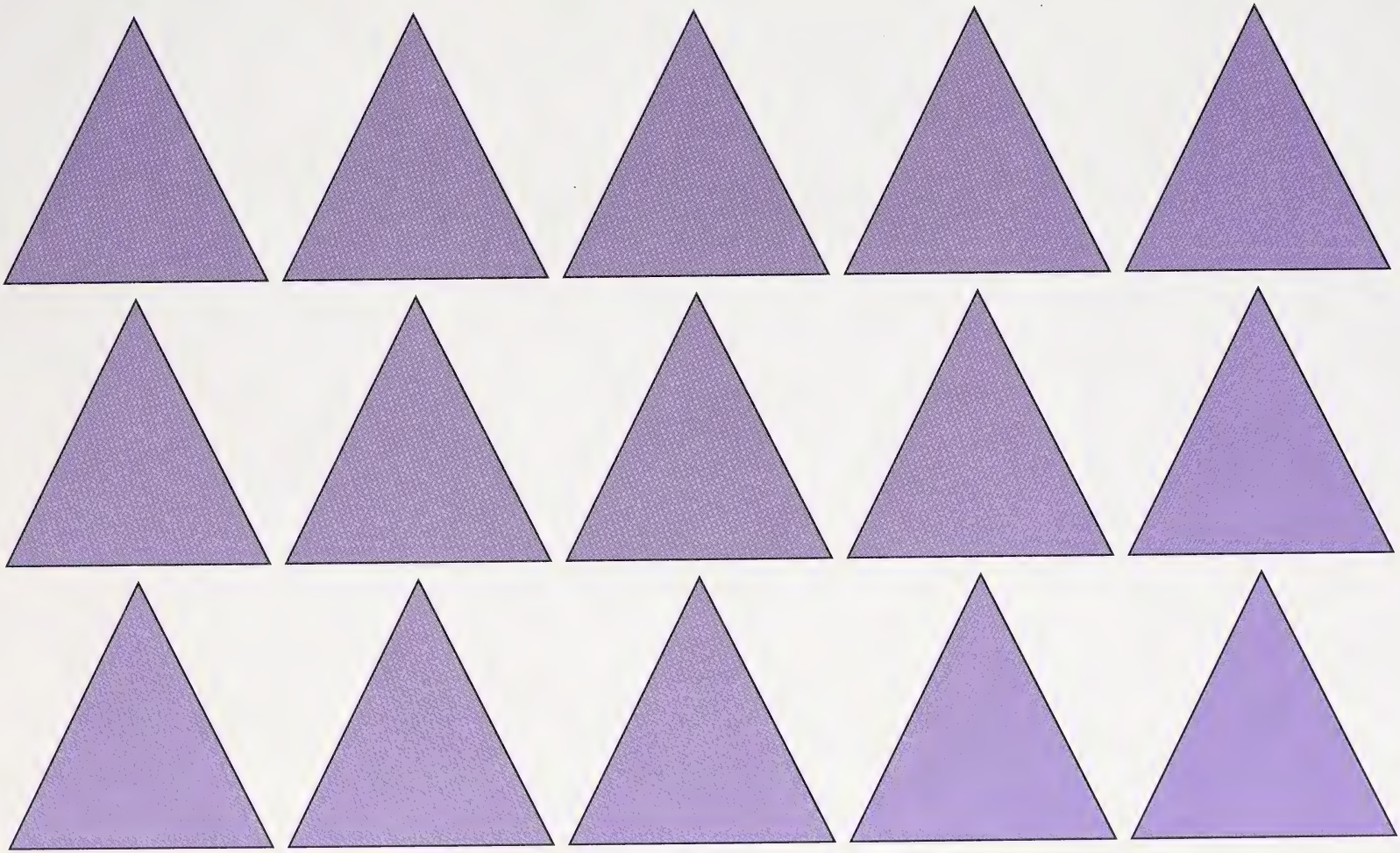
Rectangles



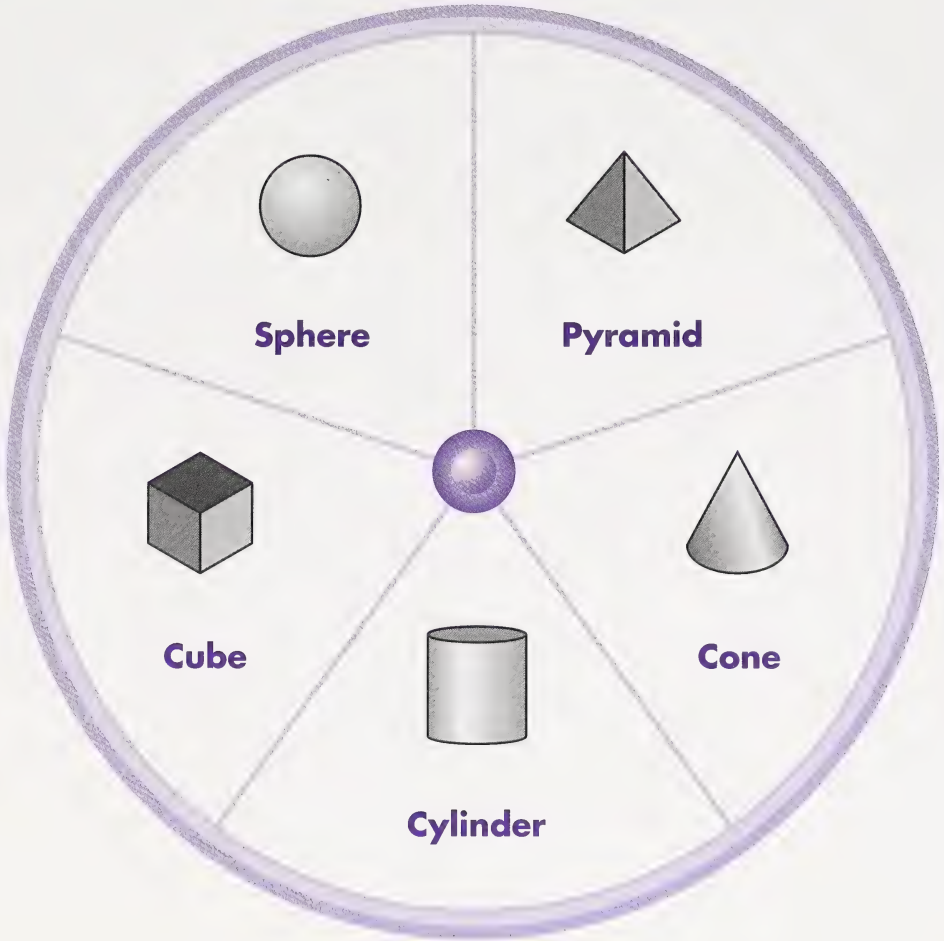
Circles



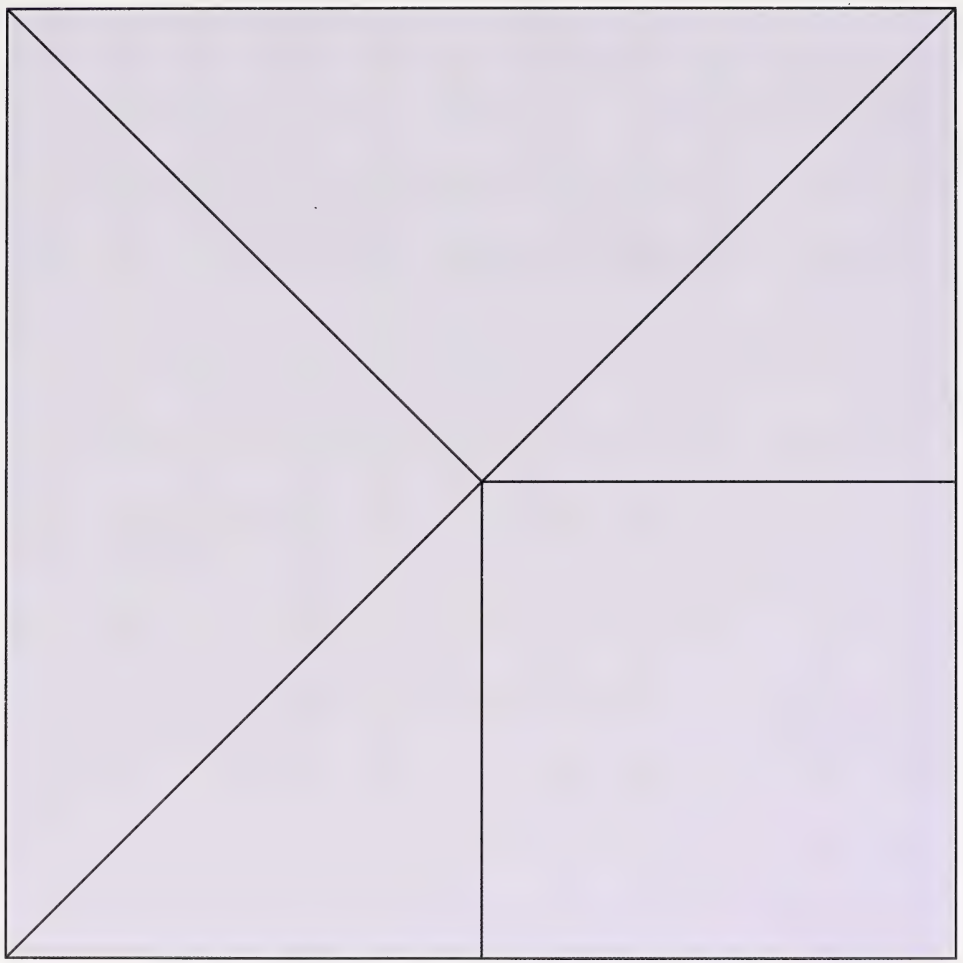
Triangles



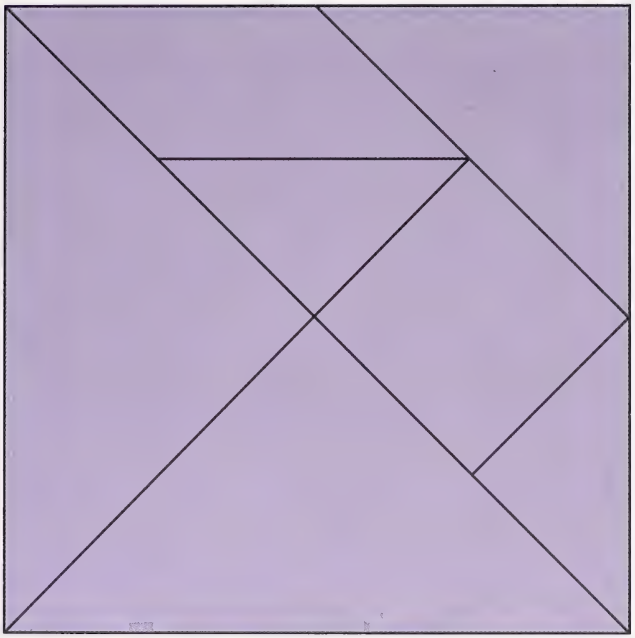
Spin Game

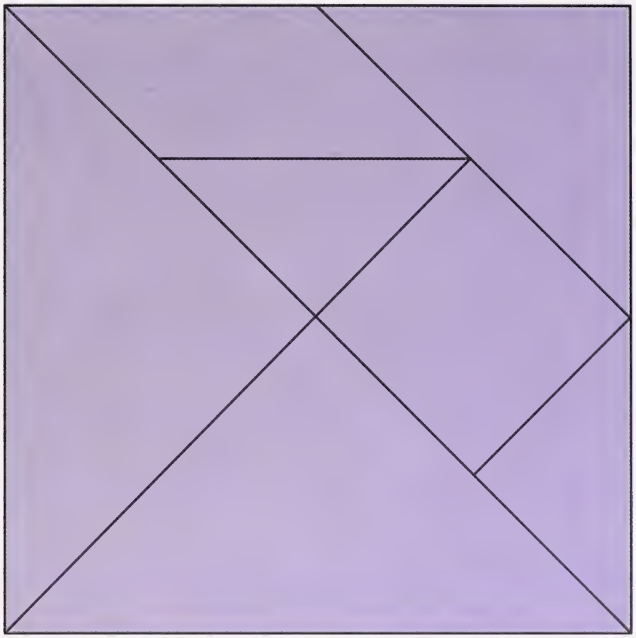


Five-Piece Puzzle

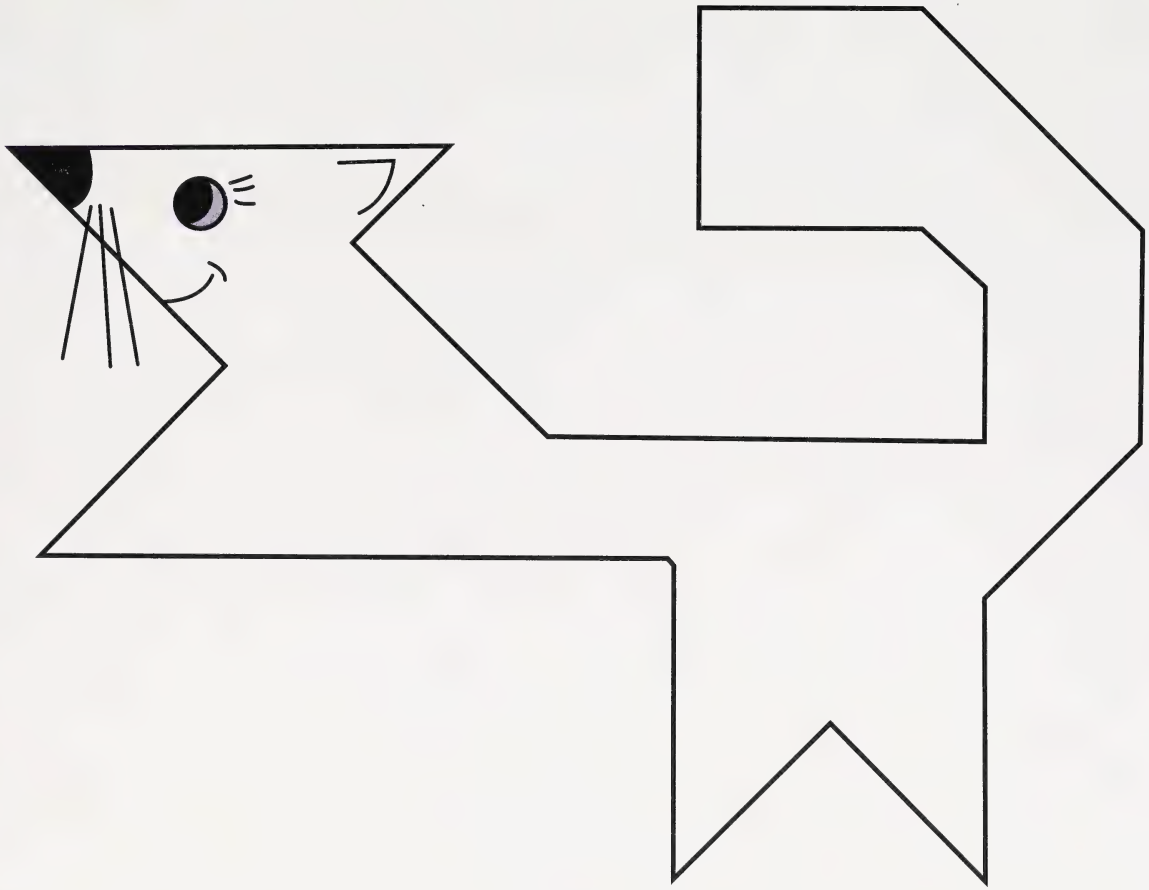


Tangram Puzzles

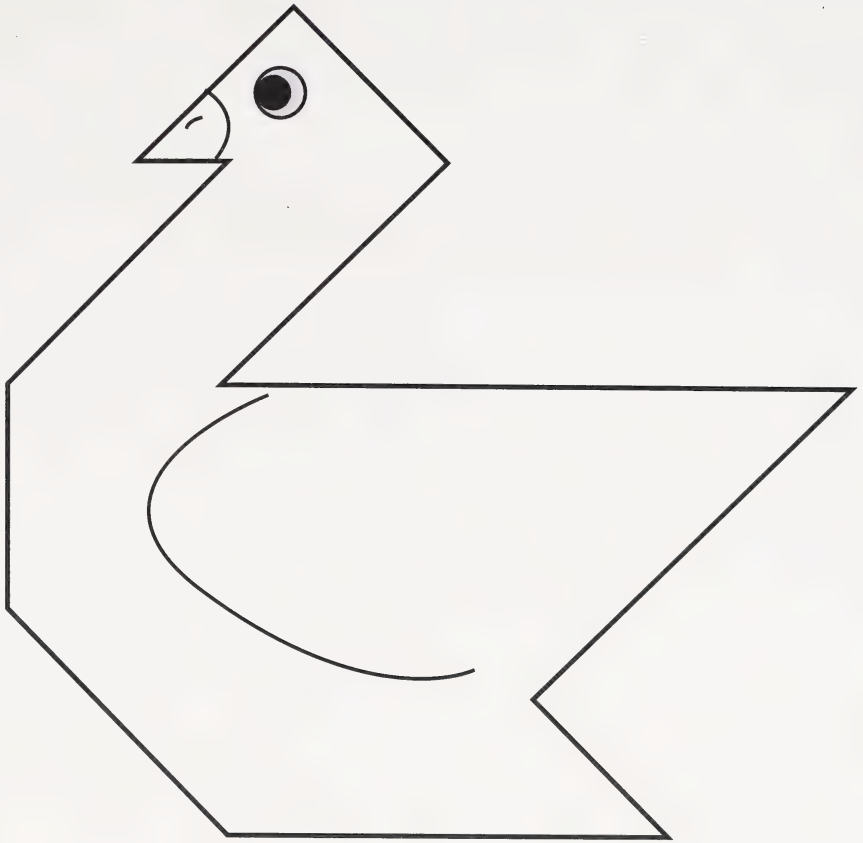




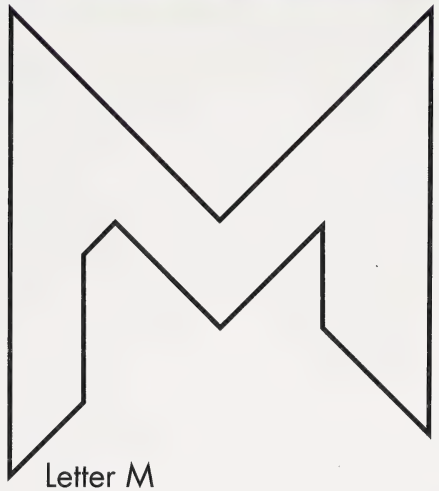
Tangram Tangles



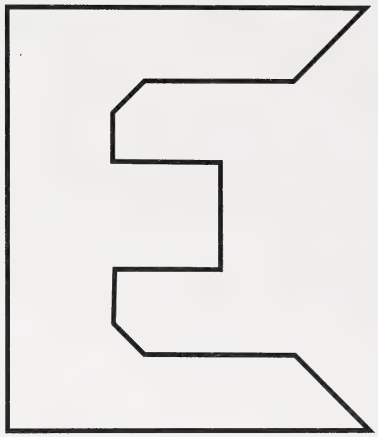
Squirrel



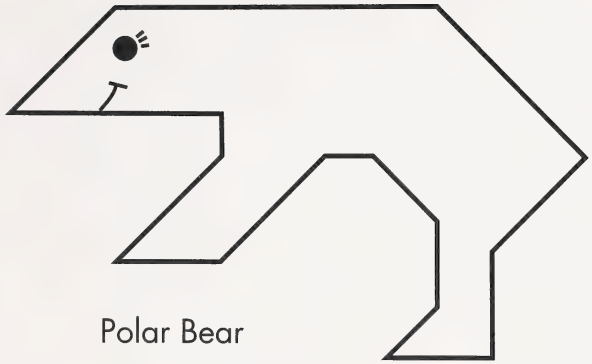
Duck



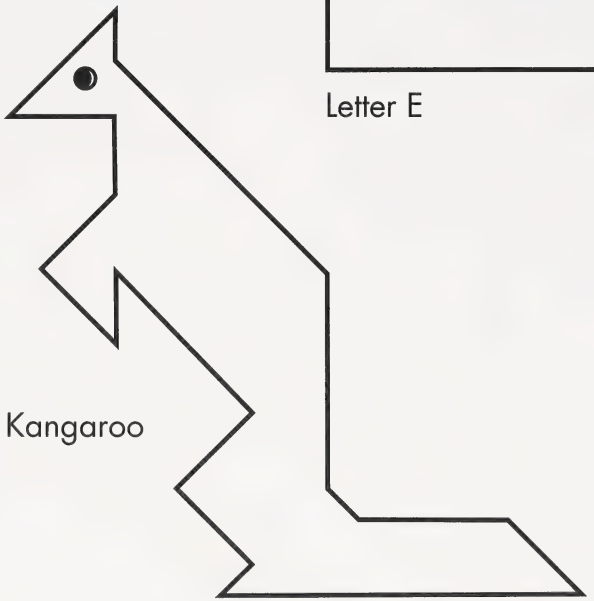
Letter M



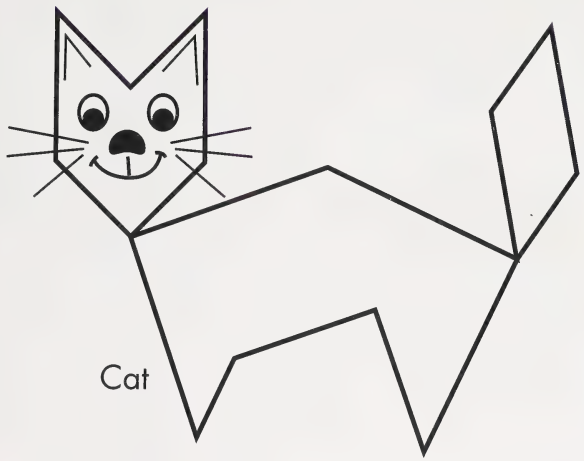
Letter E

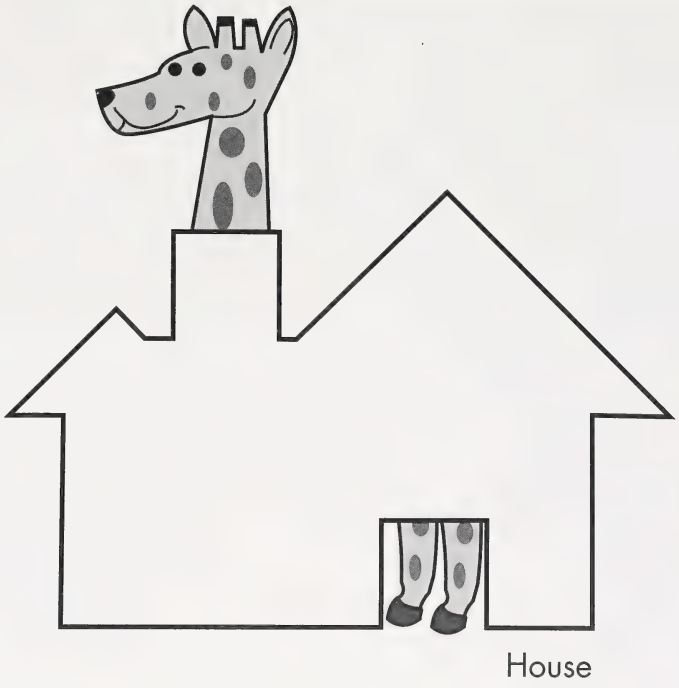


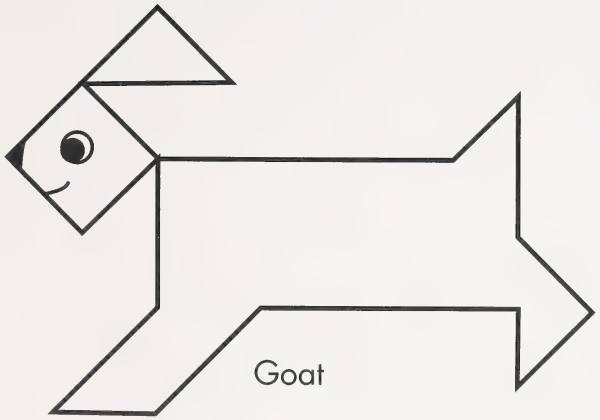
Polar Bear

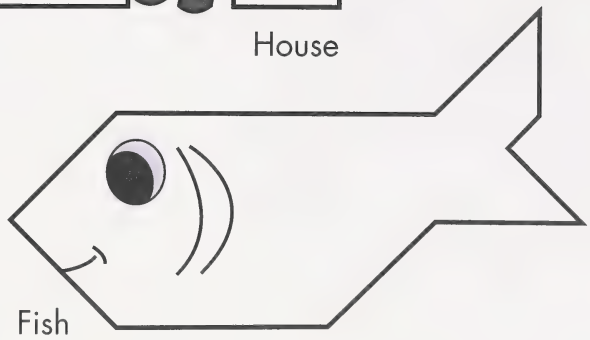


Kangaroo

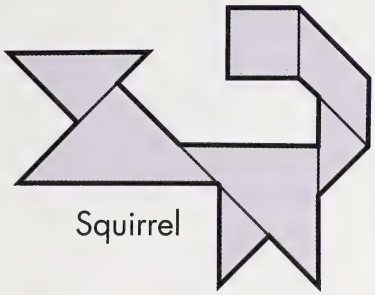

Cat

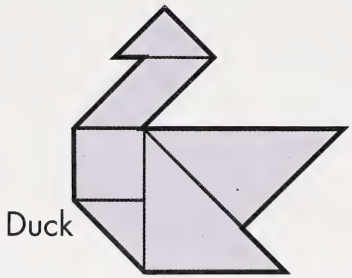

House


Goat


Fish

Tangram Tangles Answer Key


Squirrel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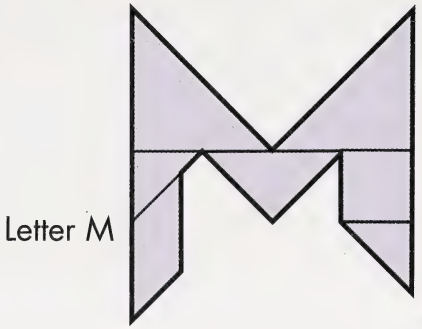
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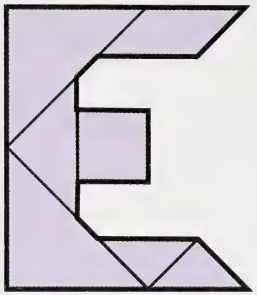
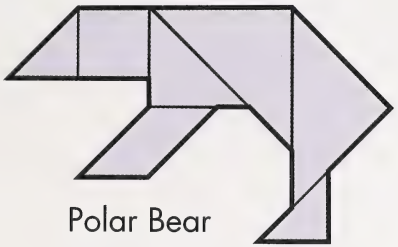

Letter E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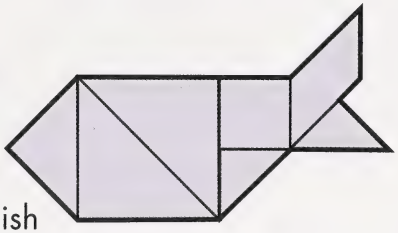
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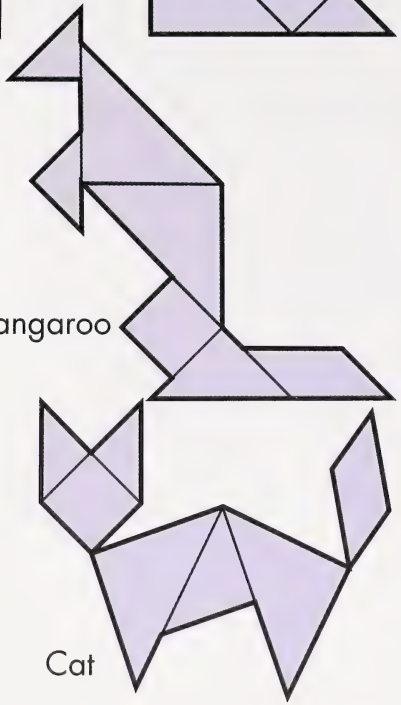
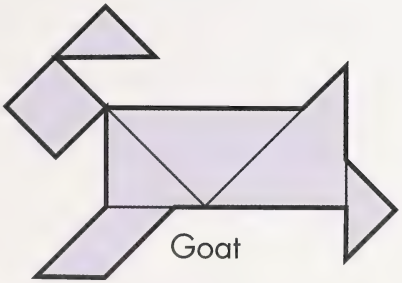
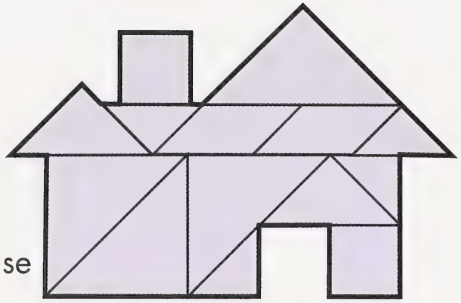

Kangaroo

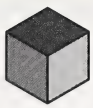

Goat

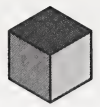
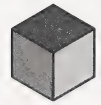

House

Cat

Gameboard

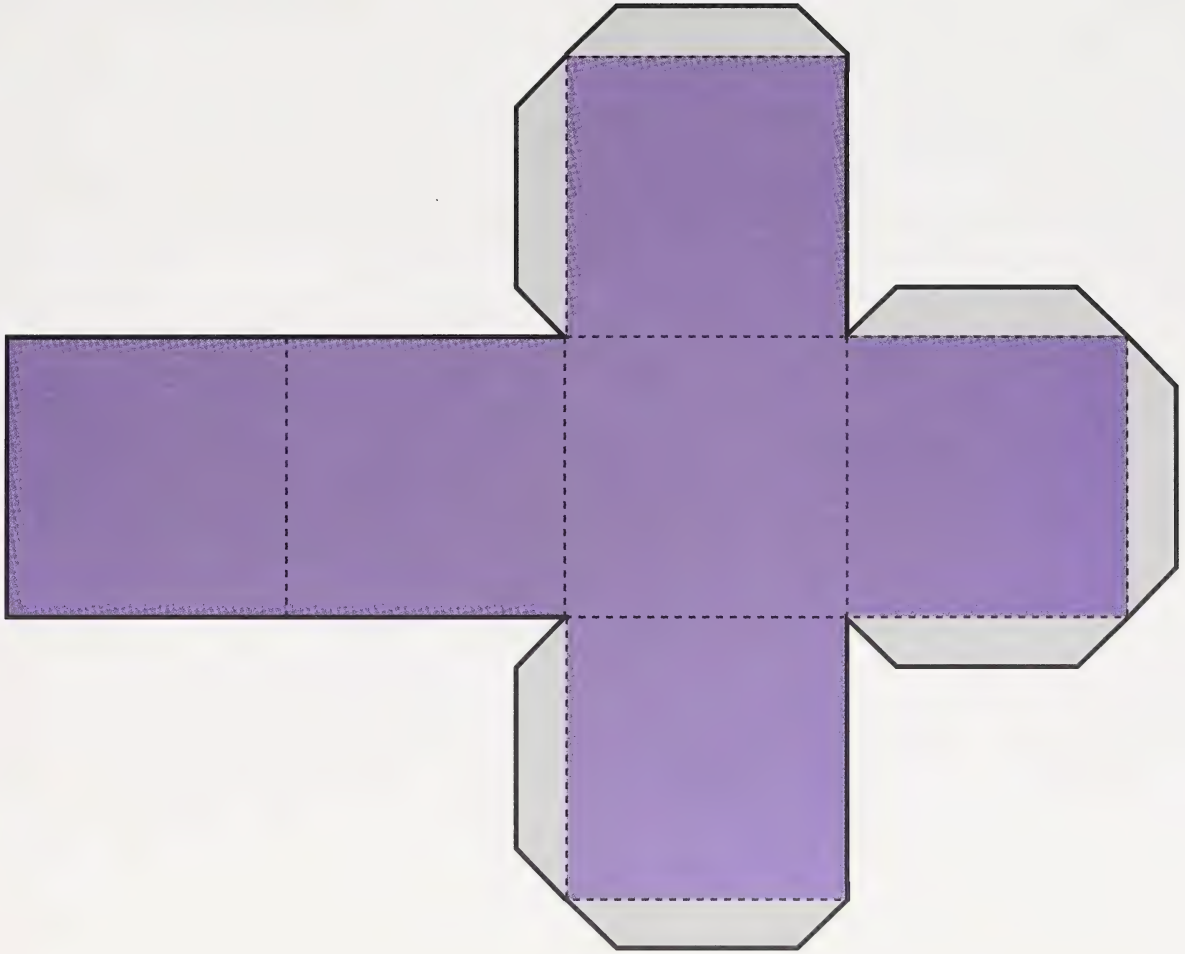
Solids Bingo Cards

B	I	N	G	O
				

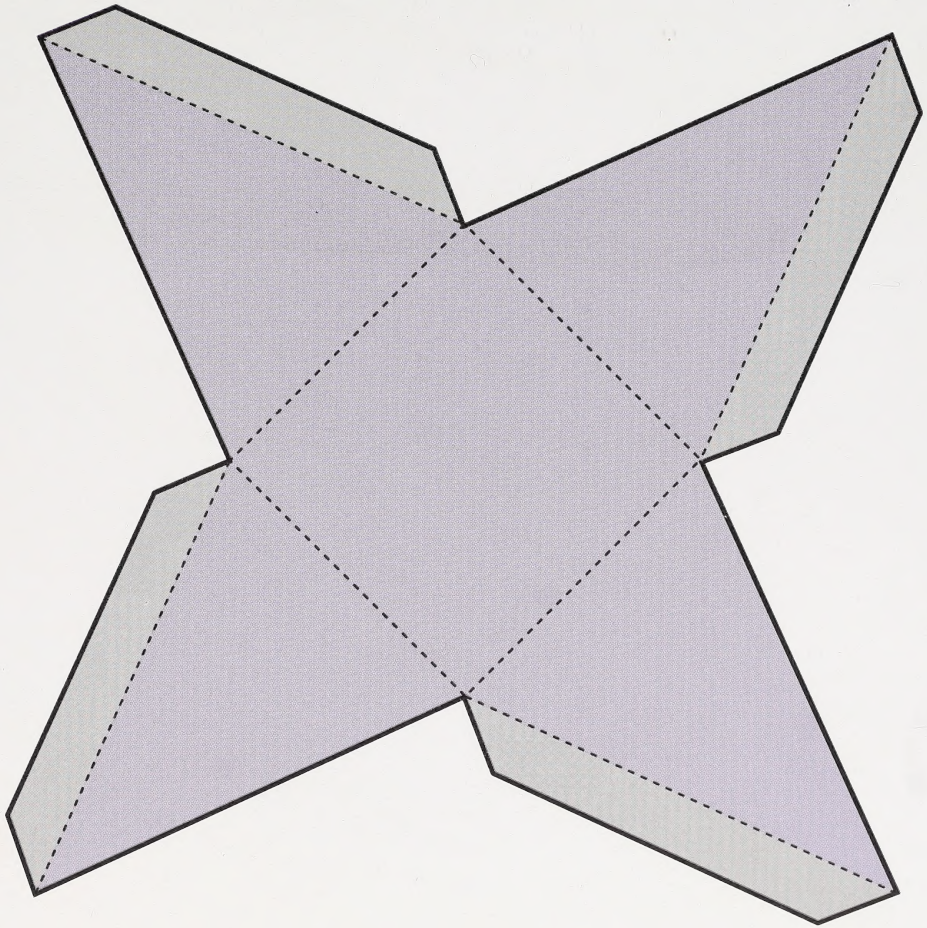
B	I	N	G	O
				
				

Nets

Cube



Pyramid



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